The IRON AGE

October 1, 1959 A Chilton Publication The National Metalworking Weekly

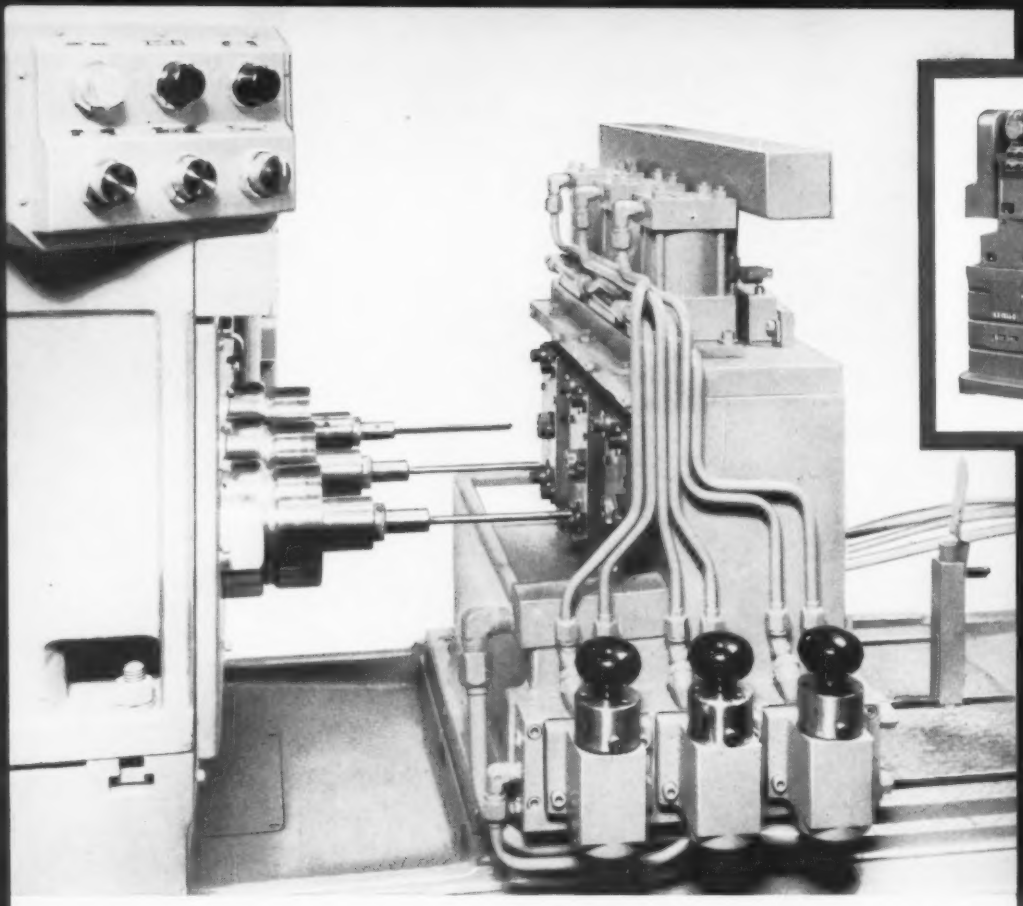
Beryllium Corp.'s Pinto and Lowry—

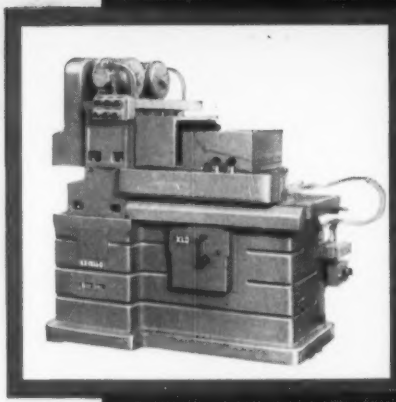
Recharting Beryllium's New Markets P. 39

What Makes a Good Plant Location? – P. 42

First Report On Argon Casting Process – P. 73

Digest of the Week – P. 2-3





A standard Style 112-D Precision Boring Machine equipped for Bor-Dril work.

Bor-Drilling on a standard 112-D Precision Boring Machine. This three-station set-up produces close-tolerance holes, smooth finish.

BOR-DRIL

PRODUCES .312-.313 DIAMETER PRECISION THROUGH HOLES IN 2½" SOLID METAL

THE PROBLEM: an auto manufacturer wanted to produce accurate, close-tolerance holes from the solid in small transmission parts without costly secondary operations.

THE SOLUTION: Ex-Cell-O Style 112-D Precision Boring Machines equipped for Bor-Drilling. These machines are Bor-Drilling .312"-.313" diameter through holes for a distance of 2½", three at a time in transmission range selector shaft.

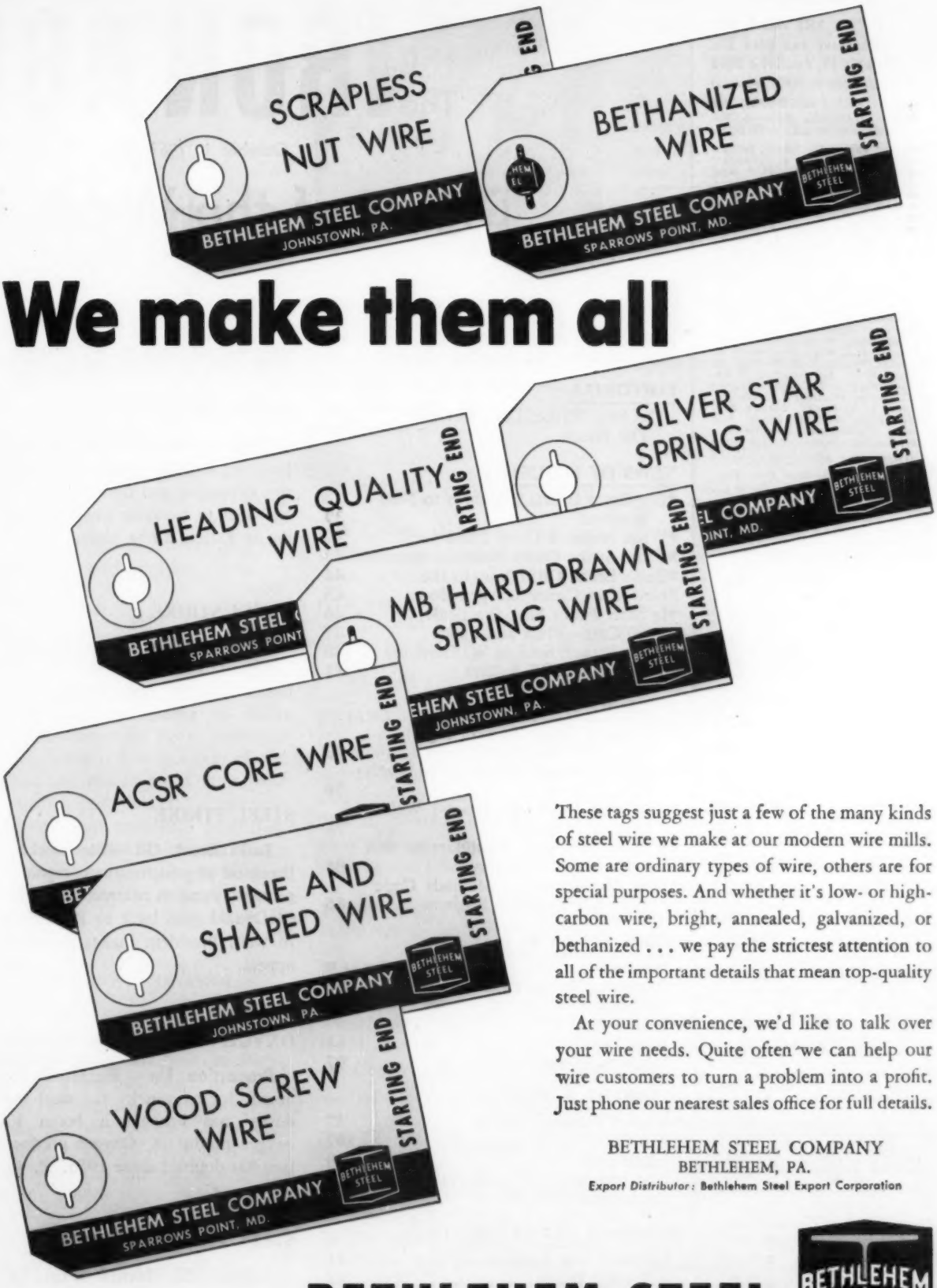
WHAT IS BOR-DRILLING? Bor-Dril is a new way of driving gun drills, adapted to high production-with-accuracy requirements. Bor-Drilling is especially effective when machining from the solid holes too long for single-tool boring applications, and holes in which it is difficult to maintain finish size. Bor-Drilling requires no secondary finishing operations in most cases. Ask your Ex-Cell-O Representative or write Ex-Cell-O, Detroit for Bulletin 311162 explaining all about Bor-Drilling.

Bor-Drilling turns out straight, accurate holes—such as these held to .312"-.313" diameter for 2½ inches.

XLO
EX-CELL-O FOR PRECISION

EX-CELL-O CORPORATION *Machinery Division*
DETROIT 32, MICHIGAN

MANUFACTURERS OF PRECISION MACHINE TOOLS • GRINDING AND BORING SPINDLES • CUTTING TOOLS • TORQUE ACTUATORS • RAILROAD PINS AND BUSHINGS • DRILL JIG BUSHINGS • AIRCRAFT AND MISCELLANEOUS PRODUCTION PARTS • DAIRY EQUIPMENT



We make them all

These tags suggest just a few of the many kinds of steel wire we make at our modern wire mills. Some are ordinary types of wire, others are for special purposes. And whether it's low- or high-carbon wire, bright, annealed, galvanized, or bethanized . . . we pay the strictest attention to all of the important details that mean top-quality steel wire.

At your convenience, we'd like to talk over your wire needs. Quite often we can help our wire customers to turn a problem into a profit. Just phone our nearest sales office for full details.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

THE IRON AGE
Chestnut and 56th Sts.
Philadelphia 39, Pa., SH 8-2000

GEORGE T. HOOK, Publisher

EDITORIAL STAFF

TOM C. CAMPBELL, Editor-in-Chief
GEORGE F. SULLIVAN, Editor

Managing Editor E. C. Beaudet
News-Markets Editor R. D. Raddant
Asst. News-Mkts. Editor H. R. Neal
Technical Editor J. J. Obrzut
Asst. Tech. Editor T. P. Plimpton
Machinery Editor R. H. Eshelman
Metallurgical Editor C. L. Kobrin
Nonferrous News Editor F. J. Starin
Art Director T. S. Peaby

Associate Editors: P. J. Cathey, R. R. Irving. Assistant Editors: R. S. Cowperthwaite, Jr., M. J. Tatich. Regional Editors: K. W. Bennett, Chicago; T. M. Rohan, Cleveland; A. E. Fleming, Detroit; G. G. Carr, New York; R. R. Kay, Los Angeles; G. J. McManus, Pittsburgh; G. H. Baker, R. M. Stroupe, N. R. Regeimbal, Washington. Correspondents: F. L. Allen, Birmingham; N. Levenson, Boston; R. E. Koebbe, St. Louis; J. Miller, San Francisco; R. Kazarian, Buffalo; D. R. Coughlin, Seattle; A. T. Collins, Houston; F. Sanderson, Toronto; F. H. Harley, London, England. Chilton Editorial Board: Paul Wooton, Washington representative. Robt. Gunning—Readability Consultant

WASHINGTON EDITORIAL OFFICE

Washington 4 ....National Press Bldg.

BUSINESS STAFF

Production Manager Warren Owens
Director Research Oliver Johnson
Marketing Director R. H. Groves
Circulation Mgr. W. M. Coffey
Promotion Manager Richard Gibson
Asst. Research Dir. Wm. Laimbeer

REGIONAL BUSINESS MANAGERS

*Denotes editorial office also

Atlanta 3.....J. W. Sangston
32 Peachtree St., NE. Jackson 3-6791
*Chicago 1...T. H. Barry, W. R. Pankow
360 N. Michigan Ave. Randolph 6-2166
*Cleveland 15, R. W. Watts, R.L.White
930 B. F. Keith Bldg. Superior 1-2860
Columbus 15, Ohio ..Harry G. Mumm
LeVeque-Lincoln Tower Capital 1-3764
Dallas 6.....W. J. Smyth
189 Meadows Bldg. EMerson 8-4751
*Detroit 2.....W. J. Mulder
103 Pollister Ave Trinity 1-3120
*Los Angeles 28.....R. Raymond Kay
2420 Cheremoya Ave. Holly'd 3-1882
*New York 17...C. T. Post, I. E. Hand
100 E. 42nd St. Oxford 7-3400
*Philadelphia 39—
B. L. Herman, J. A. Crites, W. E. Carr
Chestnut & 56th Sts. Sherwood 8-2000
*Pittsburgh 19.....T. M. Fallon
1707 Frick Annex Bldg. Atlantic 1-1830
San Francisco 3.....Don May
1355 Market St. UNderhill 1-9737
W. Hartford 7.....Paul Bachman
62 LaSalle Rd. Adams 2-0486
England .....Harry Becker
15 Gratton St., Altrincham, Cheshire

A Chilton Publication

CHILTON OFFICERS & DIRECTORS

G. C. Buzby, President

Vice-presidents: P. M. Fahrendorf, L. V. Rowlands, G. T. Hook, R. E. McKenna; Treasurer: W. H. Vallar; Directors: M. E. Cox, F. P. Tighe, E. B. Terhune, Jr., R. W. Case, Jr., J. C. Hildreth, Jr., C. A. S. Heinle, J. H. Kofron—Comptroller, Stanley Appleby.

Indexed in Applied Science & Technology Index and Engineering Index.

BPA NBP

Copyright 1959 by Chilton Company

THE IRON AGE, published every Thursday by CHILTON COMPANY, Chestnut & 56th Sts., Philadelphia 39, Pa. Second class postage paid at Philadelphia, Pa. Price to the metalworking industries only or to people actively engaged therein, $5 for 1 year, $8 for 2 years in the United States, its territories and Canada. All others $15 for 1 year; other Western Hemisphere countries, $25; other Foreign Countries, $35 per year. Single Copies 50¢. Annual Review Issue $2.00. Cable: "Ironage," Philadelphia.

The IRON AGE

October 1, 1959—Vol. 184, No. 14

Digest of the Week in

★Starred items are digested at right.

EDITORIAL

The Steel Strike: Let's Review The Issues 7

NEWS OF INDUSTRY

★Beryllium Charts a Course to New Markets 39
★What Makes a Good Plant Site? 42
★Cross Strike Gains National Import 43
★Talks Break Off; It's up to Ike 44
★New Uses Create Oxygen Boom 45
★Is Steel From Slag Practical? 46
1960 Cars—Plain and Fancy 47
★U. S. Broach Sold in W. Germany .. 48
The IRON AGE Salutes 51

FEATURE ARTICLES

★Casting in Argon Lowers Ingot Inclusion Count 73
★Skillful Production Control Is Worth The Investment 76
★Capacitor Discharge Process Welds Dissimilar Metals 78
★Why Is Mill Role Manufacture Still A "Custom" Business? 80
★How Manufacturing Methods Cope With Future Space Projects 86

NEWS ANALYSIS

Newsfront 9
Report to Management 53
Automotive 55
★Washington 59
West Coast 61
Machine Tools 97

MARKETS & PRICES

Market Planning Digest 37
The IRON AGE Summary 107
Purchasing 108
Iron and Steel Scrap Markets 112
Nonferrous Markets 116

REGULAR DEPARTMENTS

Letters From Readers 11
Industrial Briefs 64
Design Digest 90
New Equipment 102

INDEX TO ADVERTISERS 131

NEWS ARTICLES

PLANT RELOCATION

What To Do—Rockwell Manufacturing Co. has undergone extensive expansion and relocation. They tell what to consider when relocating or starting a new plant. P. 42

CROSS STRIKE

Gains National Import — Court orders unprecedented hearing between NLRB and strike-bound maker of automation equipment. P. 43

STEEL STRIKE

Talks Break Off — Steelworkers break off negotiations as companies refuse to bend on contract demands. McDonald goes back to Pittsburgh to wait. President makes personal appeal. P. 44

OXYGEN FOR STEEL

Production Up — Increased demands for oxygen by the steel industry has brought a boom to oxygen producers. Oxygen production has doubled since 1955. P. 45

STEEL FROM COPPER SLAG

Arizona Mill Planned—Plans for an integrated steel mill in Arizona call for use of iron reclaimed from copper slag. Project, developed by

Metalworking

◀ COVER FEATURE

Plan Ahead—The two beryllium makers turned their outlook from grim to rosy in just about a year. The answer: New markets. Walter Lowry, president, Beryllium Corp., and N. Pinto, plant manager, and most in the industry are still planning ahead, because they say the best is yet to come. P. 39

Webb & Knapp, Inc., may have some marketing drawbacks. P. 46

NATIONAL DEFENSE

Climbing Costs—Higher weapons costs mean Americans will spend at least $40 billion for defense annually. Trimming military payrolls may help keep spending down. P. 59

FEATURE ARTICLES

CASTING IN ARGON SHIELD

For Cleaner Steels—A controlled study shows that purging of the mold and protection of the molten metal stream increase fatigue strength and transverse properties. A new method uses an argon shield to prevent the forming of oxides during the teeming operations. P. 73

PRODUCTION CONTROL

A Real Money-Maker — Every company has much to gain from looking into production control. By taking a few basic steps to streamline a company's operation, you can put lots of cash right back where it will do some good — in the till. The function is a control and a service. P. 76

WELD DISSIMILAR METALS

With Capacitor Discharges — Here's a process that's making most of welding's difficult tasks look easy. Now you can weld most dissimilar metal combinations — even miniature parts for missile and aircraft uses. P. 78

MILL ROLL MANUFACTURE

A Custom Business—What considerations must be taken into account before selecting rolls for a particular job? What types of failures are rolls subject to? How can they be prevented? P. 80

FUTURE SPACE PROJECTS

Require Better Methods — The second part of an engineering forecast points up a need for specialization to produce tomorrow's weapons concepts. Trends are toward welding and brazing. P. 86

MARKETS & PRICES

MACHINE EXPORT

Tops Competitors — Detroit Broach and Machine Co. proved the U.S. machine tool industry is far from out of world markets by selling a 20-ton broaching machine to a German auto company. P. 48

FARWEST BUSINESS

Busy 4th Quarter?—Shippers are predicting a solid quarter for West Coast business if the steel strike is settled. Carloadings may reach four-year high. P. 61

STEEL SUMMARY

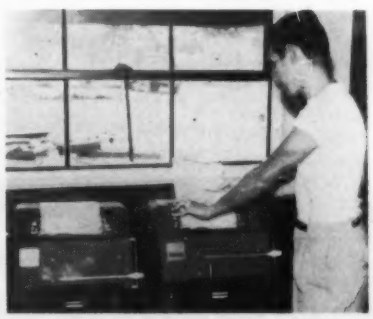
About T-H—Federal action is more or less academic as far as steel stocks are concerned. There are now less than 10 million tons of finished steel in inventories. Much of it is obsolete and out-of-balance. Steel shortages will exist for the next six months at the least. Foreign steel is little help to desperate users. P. 107

GEAR PRICES

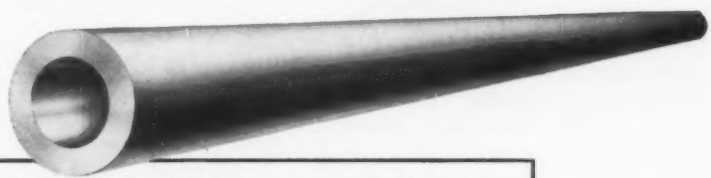
Inching Upwards—Gear prices are expected to climb shortly. Even if there is no steel price increase, gear prices will climb 4 to 6 pct. P. 108

NEXT WEEK

Communications—Metalworking is making a tremendous investment in new systems for moving information from the home office to the district, from office to the plant, etc. It's all part of the new stepped up pace and cost of doing business.



Metal Show • Booth 528
International Amphitheater
Chicago • November 2-6



How B&W JOB-MATCHED TUBING reduces fabrication costs in pressure tube applications

...Uniform mechanical properties—provide ease of fabrication... reduces fabrication costs.

...Close tolerances—provide ease of threading through tube sheets, baffles and headers... reduces fabrication costs.

...Desired lengths—long or short, eliminates field welding or cutting... reduces fabrication costs.

These are just a few of the reasons why it pays to specify B&W Job-Matched Pressure Tubing. And it is available in a complete range of sizes and in a full range of carbon, alloy and stainless steels. Call the tubing specialist at your local B&W District Sales Office, or write for Bulletin TB-417 for full information. The Babcock & Wilcox Company, Tubular Products Division, Beaver Falls, Pennsylvania.

B&W

THE BABCOCK & WILCOX COMPANY

TUBULAR PRODUCTS DIVISION

TA-9028-G4

Seamless and welded tubular products; solid extrusions, seamless welding fittings and forged steel flanges—in carbon, alloy and stainless steels and special metals

B.F.Goodrich

Rubber takes a giant step

B. F. Goodrich improvements in rubber brought extra savings

RUSHING up the side of that mountain is a stream of rock—waste from a coal preparation plant in the valley. The rocks travel by conveyor belt, at the rate of 400 tons an hour. They go nearly a third of a mile to the top of that 500-foot high ridge.

It used to be that a job like this would have taken at least three belts dumping one to the other. No one belt was strong enough to lift the heavy weight the whole distance.

Then B.F.Goodrich developed a rubber belt that has a backbone of steel. Steel cords, made of twisted strands of wire, run lengthwise through the belt, each strand completely surrounded by rubber. The belt has all the flexibility of our regular rubber belts plus the extra strength and load-carrying power of the steel cords.

That's why one long belt can do the whole job at this West Virginia mine —and at a terrific saving. Money was saved on maintenance and operating costs by eliminating "transfer points", which would have been necessary in any conveying system built in several stages with ordinary belts. This called for less expensive equipment in the first place, means lower maintenance costs every year. A similar B.F.Goodrich belt carrying iron ore in Minnesota is now in its twelfth season. It's lasted longer than any conveyor belt ever made with steel cords or cables.

Your B.F.Goodrich distributor has exact specifications for the belt described here. And, as a factory-trained specialist in rubber products, he can answer your questions about the many rubber products B.F.Goodrich makes for industry. *B.F.Goodrich Industrial Products Co., Dept. M-720, Akron 18, O.*

B.F.Goodrich *industrial rubber products*

Questions and Answers on METALWORKING MACHINERY

...for those concerned with specifying or buying new equipment

QUESTION: Who is the largest national supplier of metalworking machinery equipment?

ANSWER: Ryerson is the largest by far – offering over 3800 different types and models produced by almost 100 of the nation's leading manufacturers.

QUESTION: What types of machinery does Ryerson offer?

ANSWER: The most complete line available anywhere, including the best type and right capacity for every metal-fabricating job of:

Bending	Forming	Punching	Shearing
Braking	Hoisting	Rolling	Threading
Drilling	Pressing	Sawing	Welding

QUESTION: What advantages do I get by buying from Ryerson?

ANSWER: (1) Widest selection, (2) Unbiased recommendations, (3) Double guarantee: the manufacturer's warranty backed by Ryerson assurance of satisfaction, (4) Greater continuing interest because we also value your steel and aluminum buying potential, (5) A nation-wide organization of machinery specialists backed by 117 years of Ryerson experience in working with metal fabricators and in using much of the equipment in its own steel service operations.

RYERSON STEEL®

Joseph T. Ryerson & Son, Inc., Member of the INLAND Steel Family

STEEL • ALUMINUM • PLASTICS • METALWORKING MACHINERY
NATION'S MOST COMPLETE SERVICE CENTERS IN PRINCIPAL CITIES COAST TO COAST

The Steel Strike: Let's Review the Issues

The steel strike is in its twelfth week. Nationwide steel inventories total less than 10 million tons of finished steel. Company strike costs and wages not paid because of the strike total in the billions.

Why does the steel industry take such a crippling strike? Why would the Steelworkers call such a strike? No one wanted it.

There must have been basic principles inherent in the steel industry's stand to refuse to give in to the union demand for a big wage and fringe package. There were.

No more can the industry afford to see steel prices go higher. Foreign steelmakers have been eyeing the U. S. market for years. They have moved in, but they intend to move in in a much bigger way in the future. American mills must meet this head-on.

Foreign competition cannot be met when our prices go up and up because of big yearly wage and fringe benefits. Foreign competition gives all steelmakers the jitters.

The mills want to stop—or at least slow down—inflationary trends built up by yearly increases. They feel wage cost increases have far outstripped productivity year after year. The stand on inflation rules out any wage cost increase.

In an attempt to eliminate the stalemate, steel firms agreed to give some fringe and wage concessions in exchange for new contract language. This language, the companies said, would enable more efficient operations. This would provide more chance for wage and fringe benefits that would not be inflationary.

The union would have none of this. Its major offer approximates the 1956 contract. That deal cost steel firms 81¢ an hour in three years. They want none of that again.

The union claims it will settle for a non-inflationary settlement, but will not agree to contract language demanded by the steel firms. There the matter stands.

And there the matter may stand for a long time. If a Taft-Hartley 80-day cooling off period is invoked, there is no more likelihood of an agreement than there is this week.

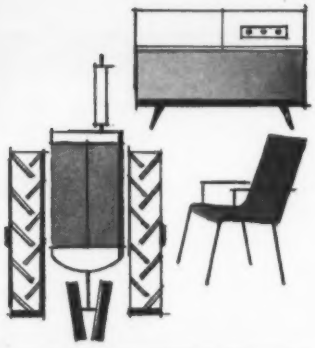
The imminence of a T-H injunction might cause bargaining to become more basic, but bargaining is not signing an agreement. Both sides know this fight is "for real."

So do the customers—now!

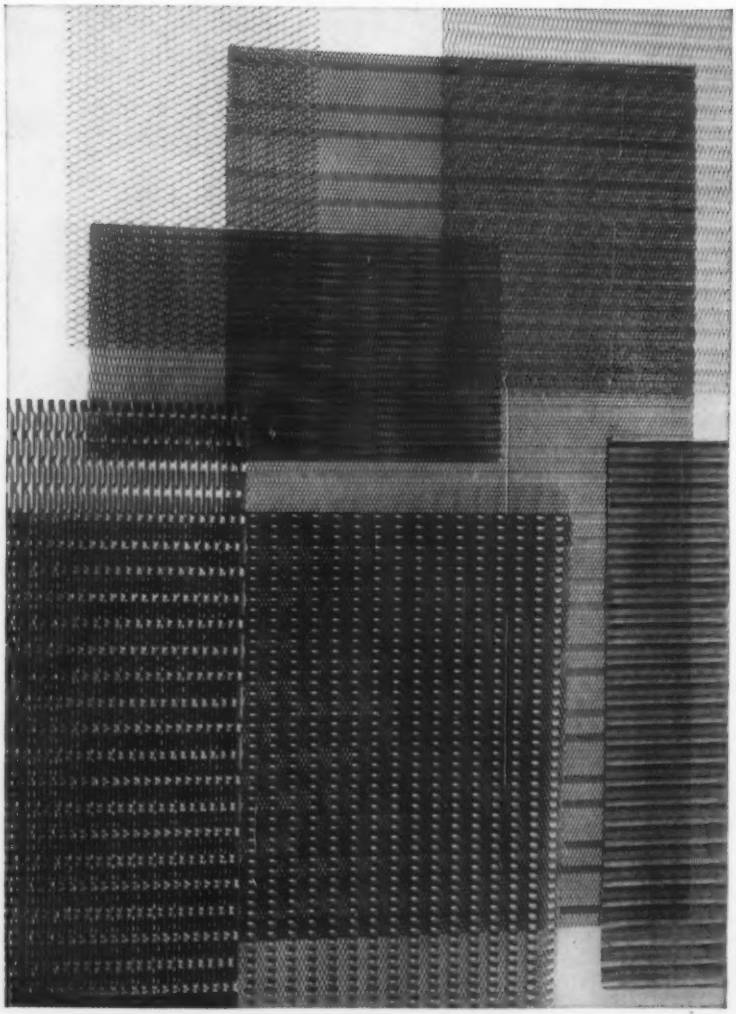
Tom Campbell

Editor-in-Chief

Inland "job-tailored"
Cold Rolled Sheets work better



product: EXPANDED METAL



problem:

the production of expanded metal panels for a wide variety of products ranging from automobiles to air conditioners, tractors to phonographs, stoves to patio furniture, television receivers and lawn mowers. These to be fabricated from decorator designs in an almost limitless range of complexity. Equipment, created specifically for the purpose, functions at highest efficiency and economy with coil steel which is cut and expanded. The often enormous stretch of quite narrow strands could cause breakage and rejection of the entire piece.

solution:

the problem presented was overcome by "job-tailored" Inland Drawing Quality Aluminum-Killed Steel. The steel not only took punishment of severe expansion and pattern formation, but provided an excellent surface for all subsequent finishing operations.

INLAND STEEL

30 West Monroe Street, Chicago 3, Illinois

Sales Offices: Chicago • Davenport • Detroit • Houston • Indianapolis
Kansas City • Milwaukee • New York • St. Louis • St. Paul

INLAND

Cold Rolled Sheets

Bonds Plastic to Steel

A process has been developed for bonding decorative, abrasion-resistant plastic coating to long, continuous coils of strip steel. The plastic can be subjected to the same end-product forming operations as uncoated steel. Tests on a 0.0003 in. thickness of the coating prove it 10 times more abrasion resistant than materials now in use. The new material resists most acids and chemicals, oxygen and industrial fumes.

Nuclear Power in Space

Air Force planners are pushing development of nuclear-powered space vehicles. Research is now under way to develop a nuclear rocket and a nuclear ramjet missile, in addition to the atomic plane. Benefits of nuclear missiles over liquid or solid-propelled vehicles should increase thrust-to-weight ratio tremendously, permitting bigger payloads for missiles and satellite carriers.

Hardness Testing

One steel company is developing a continuous hardness tester for application on a 2000-fpm strip tempering mill. The device is reportedly still on the way to completion. The steelmaker will use it in connection with a computer-controlled, highly automatic processing line.

Machining in Aviation

Studies by machine builders show that 75 pct of all parts requiring machining are turned out in lots of 20 pieces or less. Experience in the aviation industry shows that tooling and machining costs with numerical controls save between 65 and 85 pct over conventional semiautomatic methods. Transfer setups are best for high production with few product changes.

High-Purity Tungsten

Tungsten metal, more than 99.99 pct pure, is being produced in small quantities by the U. S. Bureau of Mines. Close control can be exerted in forming tungsten into tubing and other shapes. The method, known as low-temperature vapor deposition, extracts the metal from a mixture of tungsten hexafluoride and hydrogen gases by passing the mixture over a heated metal surface.

Corrosion of Iron

The National Bureau of Standards have found that the susceptibility of an iron specimen to corrosion pitting in distilled water depends on the crystallographic orientation of the metal surface. These results agree with previous NBS studies on copper and aluminum. Findings may help develop better methods to combat corrosion.

From Missiles to Autos

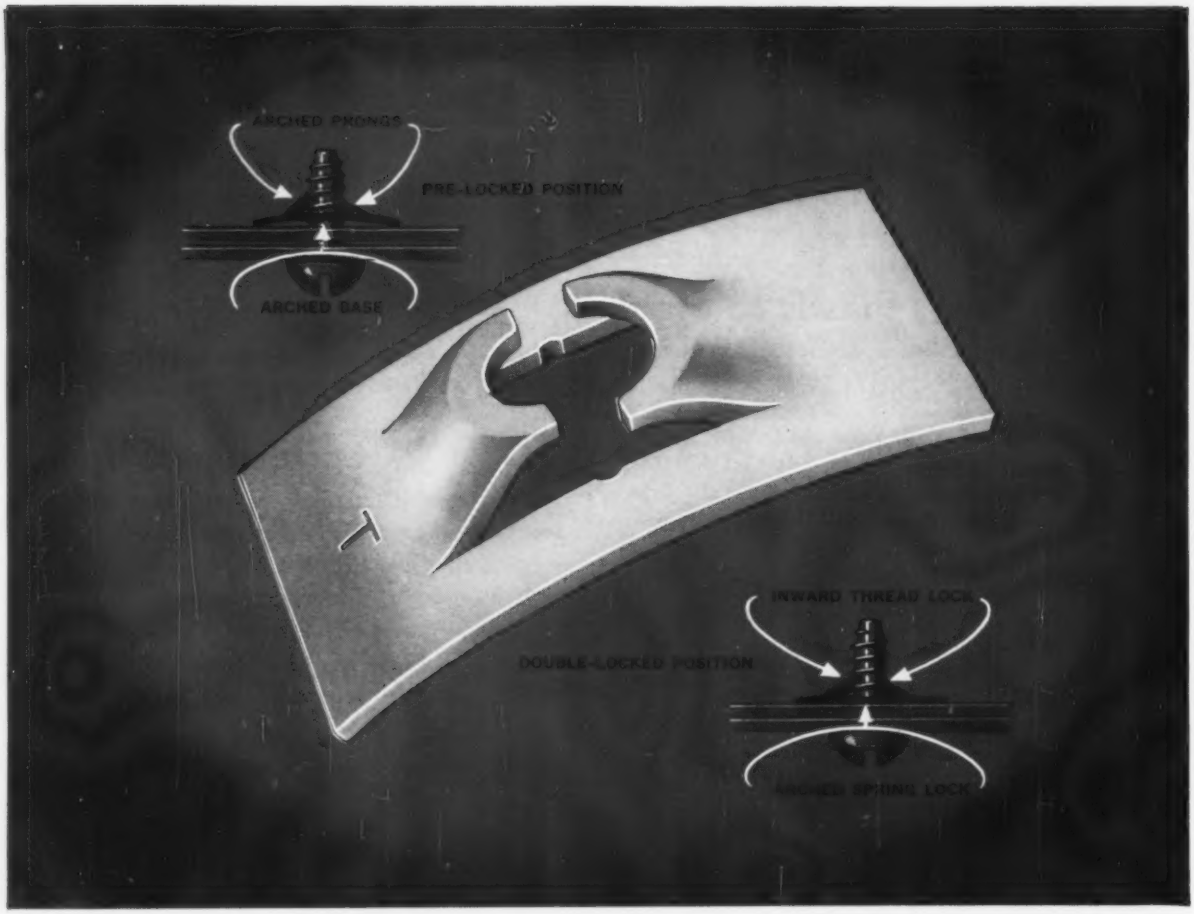
About 18 months ago, a compact, silicon six-diode rectifier was perfected for guided missiles. The invention made it possible to construct a small alternator for the Plymouth Valiant, replacing the old generator. This produces more electrical energy at lower speeds while idling. It also means the battery lasts longer and stays charged even with short-trip driving.

Ultrasonic Inspection

An ultrasonic method of detecting imperfections in sheet steel has been put into operation at a Chrysler stamping plant. Placed between the unwinding coil and the blanking machine, an ultrasonic scanner searches out laminations and sprays the imperfection with a purple dye. A method is now being tested that would accept or reject 300 spot welds every 4½ seconds.

Extracting Uranium

Tests in Japan indicate that atmospheric oxidation leaching is a good method to extract ore from the low grade material studied, 0.081 pct uranium ore. By this method over 96 pct of uranium, together with some copper and from 0.3 to 2 pct iron, were extracted at 60°C in six hours. A nitric acid method obtained the same results. And atmospheric leaching in water with oxygen recovered over 80 pct of the uranium.



Another Tinnerman Original...

Self-locking **SPEED NUT®** goes on fast, never shakes loose...and reduces costs!

With only one piece to handle, you can quickly position this Tinnerman Flat-Type SPEED NUT in screw-receiving position in one motion. No threaded nuts, no lock washers, no spanner washers to worry about.

Drive the screw and this spring-steel fastener locks tight, never to shake loose; yet easy to remove and reuse whenever you desire. SPEED NUTS won't freeze on screw threads!

Tinnerman Flat-Type SPEED NUTS are made in a full range of sizes, tensile strengths and corrosion-resistant finishes. Design variations also provide many multiple-function special types.

Lower cost per thousand plus lower cost of assembly give you maximum cost-reduction benefits... with maximum fastening assurance.

For more information, refer to your Sweet's Product Design File, section 7-Ti. Your Tinnerman representative has samples and prices. He's listed under "Fasteners" in the Yellow Pages. Or write to:

TINNERMAN PRODUCTS, INC.
Dept. 12 • P.O. Box 6688 • Cleveland 1, Ohio

TINNERMAN
Speed Nuts®

FASTEST THING IN FASTENINGS®

CANADA: Dominion Fasteners Ltd., Hamilton, Ontario. GREAT BRITAIN: Simmonds Aerocessories Ltd., Treforest, Wales. FRANCE: Simmonds S.A., 3 rue Salomon de Rothschild, Suresnes (Seine). GERMANY: Nocano-Bundy GmbH, Heidelberg.

LETTERS FROM READERS

Problem Employees

Sir—Please include us on your undoubtedly fast growing list of requests for reprints of the three-part series on problem employee by Dr. Robert N. McMurry.

Dr. McMurry is to be congratulated on the clarity with which he presents his facts and opinions. It was a real pleasure to read an article on this subject devoid of "gooblygook" and popular cliches. —J. A. Pruessner, Plant Mgr., Henrite Products Corp., Ironton, O.

Sir—Please send me a copy of "How to Handle Different Kinds of Problem Employees," and "Management's Obligation To Its Problem Employees."

Let me commend you and Dr. McMurry for presenting information on a subject often neglected in management training of junior executives.—G. H. Macshane, Met. Engr., The McKay Co., York, Pa.

▪ **Reprints have been mailed.—Ed.**

The Top Ten

Sir—We in the Philadelphia Field Office of the U. S. Dept. of Commerce were very happy to see the write-up in your Fatigue Cracks column of Sept. 17 on "The Top Ten"—the ten most popular government publications.

We would also like to mention that the Philadelphia Field Office, along with the other 32 field offices located throughout the country, are the sole sales agents of Government Printing Office publications outside of Washington, D. C. The field offices are set up to take care of requests for any GPO publications—in most cases giving immediate service direct from our office stock.

In addition our business reference library is open to all and staffed with experienced personnel ready to assist on business problems.—David Jamieson, Mgr., Field Services, U. S. Dept. of Commerce, Phila.

Dollar Series

Sir—Could you send two reprints of the excellent article on lubrication which appeared in the Aug. 20 issue of IRON AGE?

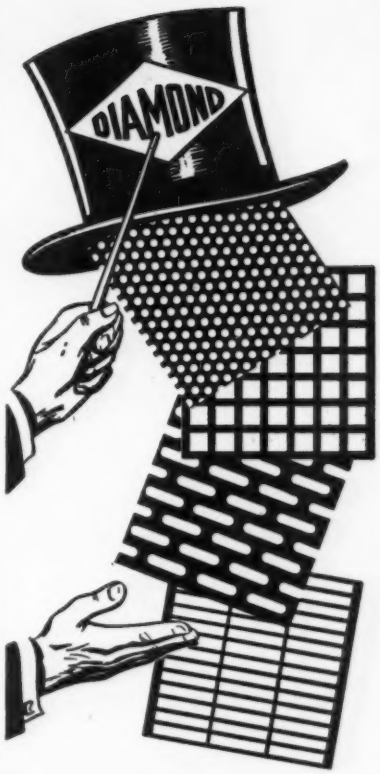
This is one of the finest articles I have ever read on the subject of lubrication programs for industry. —J. E. Sutter, Ind. Rep., Socony Mobil Oil Co., Inc., Cincinnati.

Sir—I appreciated your fine article on "How to Get More for Your Fastener Dollar" in the July 2 issue.

This is one of the most informative articles I have read covering the fastener picture. As I am preparing a bulletin for the salesmen in my district, I would like to have eight reprints, if they are still available.—D. B. Hull, Dist. Sales Mgr., Republic Steel Corp., Bolt and Nut Div., Cleveland.

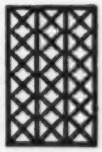
▪ **Reprints are on the way.—Ed.**

"You know, Al, I think we're lost."

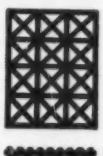


Top-Hat Quality IN Perforated Metal

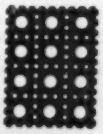
The popular Diamond Perforated-metal patterns shown above are only a few of the many illustrated and described in our 32-page Catalog No. 39. All of these standard patterns are available in a wide range of unit-opening sizes and we are always equally pleased to quote on original designs of any type or size.



Catalog 39 also illustrates and describes our high-quality lines of *Ornamental Cane*, Perforated-Metal Sheets for Accoustical installations and Heavy-Duty Architectural Grilles. Write, today, for a free copy.

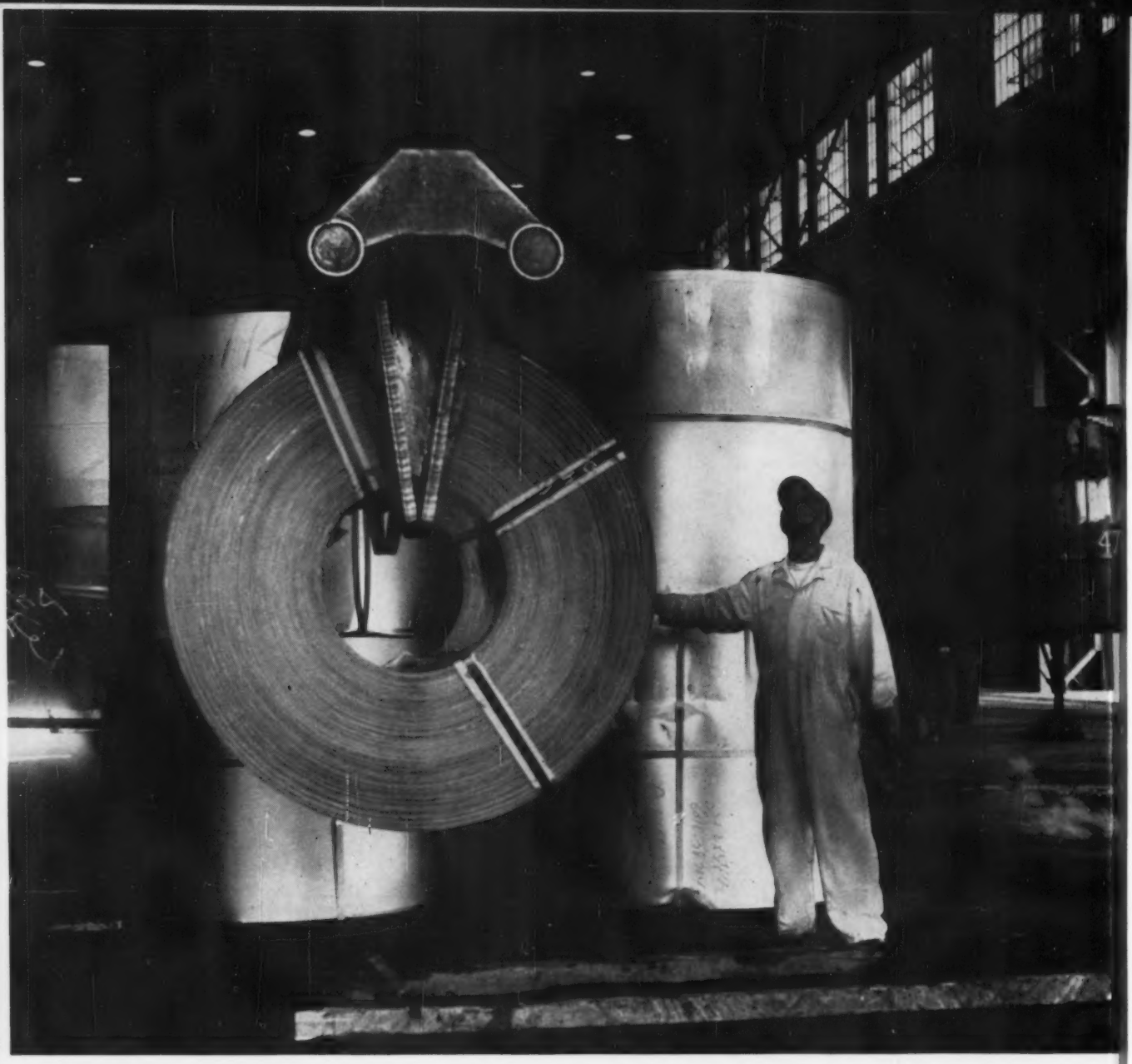


Correspondence is especially invited regarding ANY requirement for perforated-metal panels or parts. We are equipped to fabricate special sections to any desired extent and welcome opportunities to make money-saving suggestions.



DIAMOND MFG. CO.
WYOMING PA.

Manufacturers of DIAMONTEX, the Perforated Metal Lay-in Panel for better Acoustical Ceilings. New Bulletin No. 47 gives complete illustrated information. Write for free copy.



INSTANT STEEL

A CALL TO YOUR LOCAL STEEL DISTRIBUTOR ENDS IN-PLANT SHORTAGES FAST!

Emergency? Your steel service center can end it in a hurry with practically any amount, quality, size or shape of steel you may need. No more in-plant steel shortages—no more plant shutdowns—no more lost contracts.

Or you may choose to use his facilities, stocks and fast delivery service on a regular basis. Whatever your production needs, your local steel distributor is on hand ready to give instant service. All you have to do is phone.

Call him for any quantity of Weirkote continuous-process zinc-coated sheets, Weirzin electrolytic zinc-coated sheets, hot- or cold-rolled sheets or any type of steel you may need for any type of production job.

WEIRTON STEEL COMPANY

WEIRTON STEEL COMPANY

WEIRTON, WEST VIRGINIA

a division of

NATIONAL STEEL CORPORATION

Frenzied Finale

Collapse of the steel labor talks created more excitement and action at bargaining headquarters in New York's Hotel Roosevelt than the talks had produced in weeks.

Our man at the scene says the press scurried for telephones, often found them occupied by union and industry aides calling for reservations home. Television cables and equipment were a hazard in navigating around the press room.

Who Goes Where?—One union aide dramatically slapped a double handful of room keys on a table, symbolizing the end of the talks. Reporters and public relations men compared notes on who would handle what and where—when the next round starts in Washington, Pittsburgh, or wherever.

But second thoughts indicated everyone might not be headed for home. The industry spokesmen said they would return the following Monday, despite the breakoff.

Crowded Sky

The Russian moon shot added one more to a skyfull of satellites or space probes. It also created some tracking problems right here on earth.

Republic Aviation Corp. has an exhibit at New York's Hayden Planetarium charting the various satellites hurled aloft by the U. S. and the U. S. S. R. Keeping an up-to-date space inventory is difficult, what with the rain of launchings and later dropouts.

Besides Lunik II which splattered into the moon on Sept. 13, there are now in orbit two Sputniks, two Vanguards, three Explorers and four Discoverers.

Space is getting to be an attractive area for a scrap dealer.

Tough Break

Recently we had a note from Clement C. Caditz, president of Northern Metal Products, Chicago, in which he enclosed the photo below.

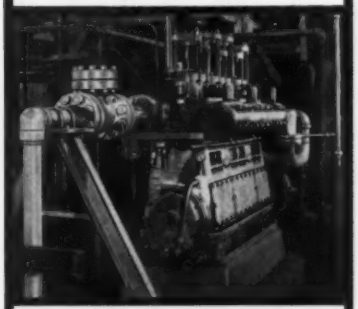
"Things are getting rougher as the steel shortage begins," he wrote. "They had better end the strike before our customers break my other arm."

Actually Clem can't blame the strike for his broken arm. It's the result of an accident. But there's no doubt stampers like Northern Metal Products are feeling the full impact of the shutdown.

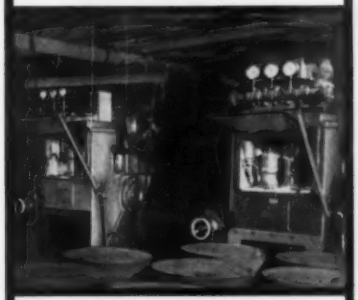
Familiar Theme — Readers who managed to live through the Korean War steel shortage may recall that Mr. C wrote a series of letters to this column between August 10 and October 9, 1950. Though they touched on a subject which was far from funny, their recital of Clem's troubles in getting enough steel to keep going was hilarious.

This isn't Clem's first photographic appearance in IRON AGE. He was featured on the cover of April 16 for the special report on "Are Stampers Recovering Ground in 'Make or Buy' Battle?"

COMPLETE CENTRAL HYDRAULIC SYSTEMS FOR



die casting



extruding

plastics molding

From Aldrich you get all the benefits of unified engineering plus the newest in pumping equipment. Aldrich Direct Flow Pumps to 2500 hp. Aldrich-Groff Controllable Capacity pumps to 125 hp. Pressures to meet your requirements. Write for data.

LOWER PUMPING COSTS WITH

ALDRICH

Aldrich Pump Company
8 Pine Street, Allentown, Pa.

3,500,000 pounds of plating

processed by this UDYLITE TEMPRON cylinder . . . and it's *still going strong*

Al Betteley of Bellevue Plating says:

"We are thoroughly satisfied with Udylite TEMPRON Cylinders. The only reason that we haven't bought more of them for our present equipment is that we haven't worn out the original ones. You may be sure that we will specify Udylite TEMPRON cylinders on any new equipment of this type."

This TEMPRON Cylinder has handled more than three and one half million pounds of work without replacement or repair. This impressive performance was recorded at the Detroit plant of Bellevue Plating, a division of National Machine Products Co. There, 24 of these cylinders continue daily to deliver high economy, low maintenance production for the fifth straight year. They are operated regularly under extreme and abrupt temperature changes stubbornly resisting heat, cold, abrasion and chemical action.

In the experience of users everywhere, these rugged TEMPRON Cylinders, an original Udylite design, prove to be a best-possible buy. You, too, can achieve full production with an absolute minimum of shut-downs for maintenance by installing durable Udylite TEMPRON Cylinders in your plant. If you're not already enjoying the benefits of these perennially economic producers you owe it to yourself to investigate their money-making potential. Ask your Udylite man about TEMPRON cylinders or write . . .

the udylite corporation

detroit 11, michigan • world's largest plating supplier

COMING EXHIBITS

Metal Show — Nov. 2-6, International Amphitheatre, Chicago. (American Society for Metals, 7301 Euclid Ave., Cleveland 3.)

MEETINGS

OCTOBER

National Assn. of Sheet Metal Distributors — Annual meeting, Oct. 4-7, Atlantic City, N. J. Association headquarters, 1900 Arch St., Philadelphia 3.

The Material Handling Institute— Joint industry fall meeting, Oct. 4-8, Lake Placid, N. Y. Institute headquarters, One Gateway Center, Pittsburgh 22, Pa.

Truck Body & Equipment Assn., Inc.—Annual convention and exhibit, Oct. 5-7, Sherman Hotel, Chicago. Association headquarters, 1616 "K" St., N. W., Washington 6, D. C.

American Gas Assn.—Annual convention, Oct. 5-7, Chicago. Association headquarters, 420 Lexington Ave., New York.

Society of Automotive Engineers— National Aeronautic meeting, aircraft manufacturing forum and engineering display, Oct. 5-10, Ambassador Hotel, Los Angeles. Society headquarters, 485 Lexington Ave., New York 17, N. Y.

Gray Iron Founders' Society, Inc. —Annual meeting, Oct. 7-9, Fairmont Hotel, San Francisco, Calif. Society headquarters, 930 National City-E 6th Bldg., Cleveland.

American Society of Tool Engineers —Annual meeting, Oct. 8-10, Chase-Park Plaza Hotels, St. Louis. Society headquarters, 10700 Puritan Ave., Detroit 38, Mich.

Conveyor Equipment Manufacturers Assn.—Annual meeting, Oct. 10-13, Grand Hotel, Point Clear, Ala. Association headquarters, One Thomas Circle, Washington, D. C.

Farm Equipment Institute — Annual convention, Oct. 11-14, Queen

(Continued on P. 16)

SHEPARD NILES

Monorail Hoist

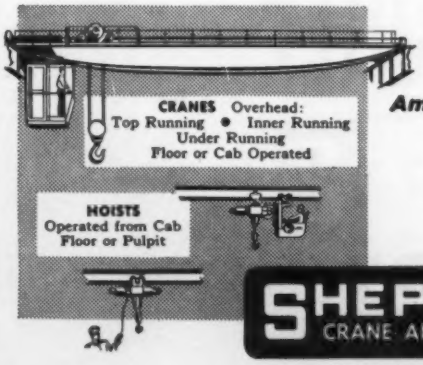
TRANSPORT MATERIALS

...by the most direct route

WHY MOVE MATERIALS around men and machines?

Transport them directly there, through the air. A Shepard Niles Monorail Hoist and Transfer Crane will put load handling overhead where it will function safely, swiftly, at low cost.

Let us show you the complete line of Shepard Niles hoists available for constant or intermittent service. Choose from light, medium or heavy duty hoists, equipped with either cab or floor controls. Offered in fast, medium or slow speeds.



● Send for latest Monorail Hoist Bulletin . . . ask to have a Shepard Niles representative assist you in selecting a hoist best suited for your plant.

America's Most Complete Line

of Cranes and Hoists

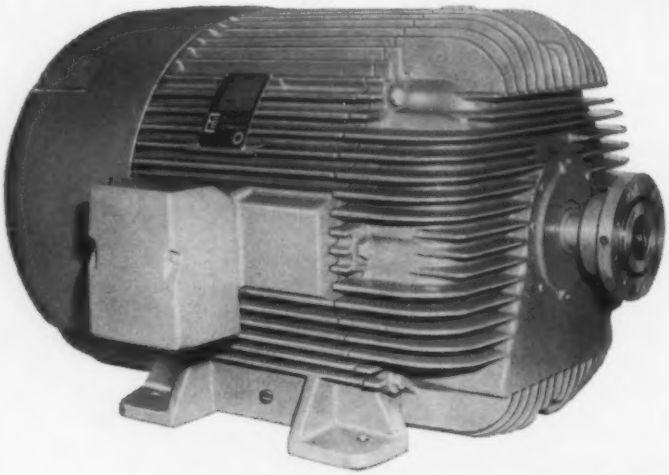
Since 1903

SHEPARD NILES
CRANE AND HOIST CORPORATION

1480 Schuyler Ave., Montour Falls, N.Y.

ELLIOTT C-W SEALEDPOWER MOTORS

This new 300-hp unit is the largest of the Elliott C-W "family" of ribbed-frame enclosed motors, pioneered in the United States by Crocker-Wheeler.



BEST FOR YOUR TOUGHEST JOBS BECAUSE THEY ARE BETTER COOLED BETTER PROTECTED BETTER BUILT

IMPORTANT FACTS are given in new Elliott Bulletin PB 6000-2. Send for free copy now.

ELLIOTT Company

Crocker-Wheeler Plant • Jeannette, Pa.

W9-5

EXHIBITS, MEETINGS

(Continued from P. 15)

Elizabeth Hotel, Montreal, Canada. Institute headquarters, 608 S. Dearborn St., Chicago.

American Society for Testing Materials—Pacific area national meeting, Oct. 11-16, Sheraton-Palace Hotel, San Francisco, Calif. Society headquarters, 1916 Race St., Philadelphia.

Wire Assn. — Annual convention, Oct. 12-15, Statler Hotel, Cleveland. Association headquarters, 453 Main St., Stamford, Conn.

Foundry Equipment Mfrs. Assn., Inc.—Annual meeting, Oct. 15-17, Greenbrier Hotel, White Sulphur Springs, W. Va. Association headquarters, One Thomas Circle, Washington 5, D. C.

The Electrochemical Society, Inc.—Fall meeting, Oct. 18-22, Deshler-Hilton Hotel, Columbus, O. Society headquarters, 1860 Broadway, New York 23, N. Y.

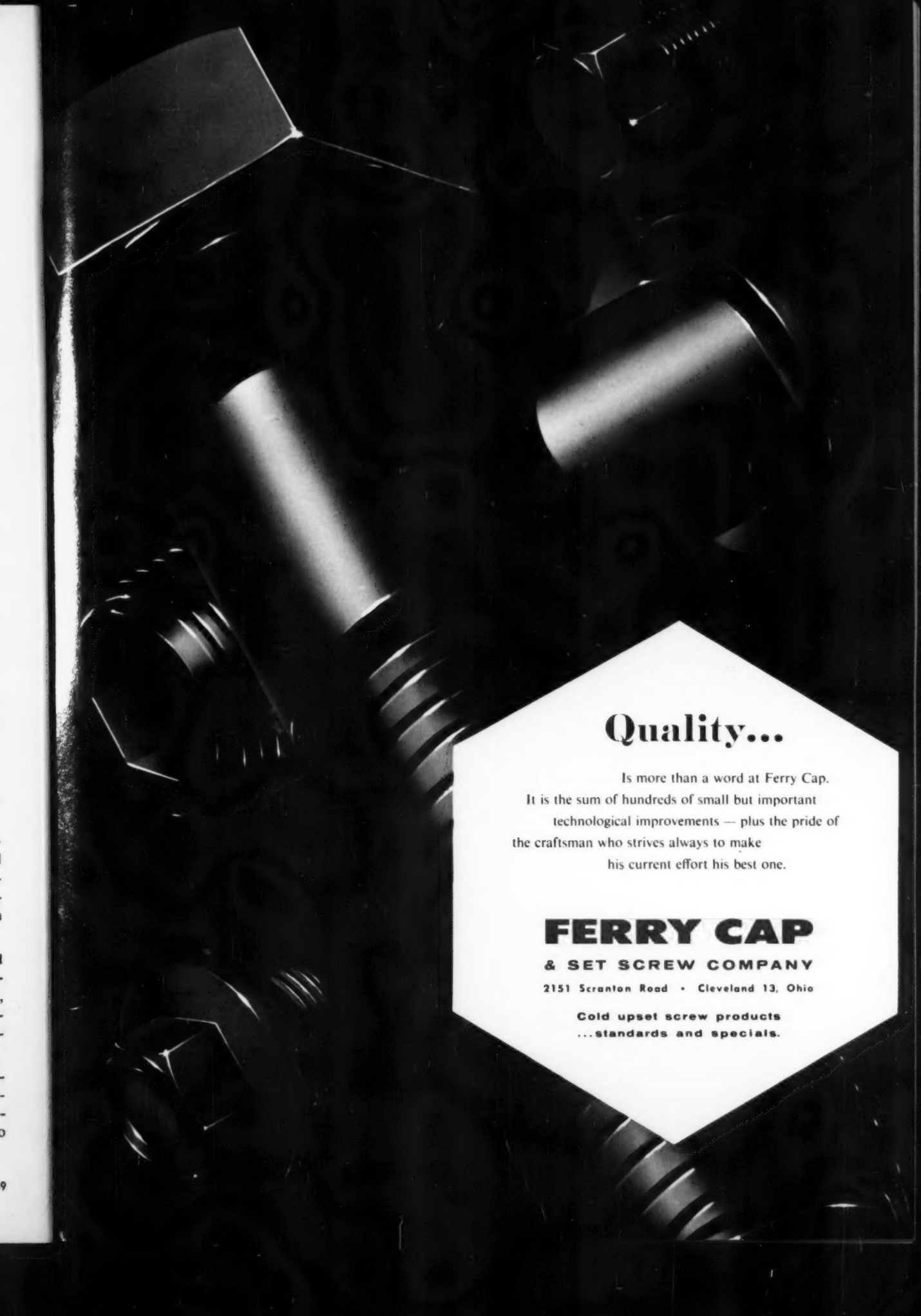
The Magnesium Assn.—Annual convention, Oct. 19-20, Hotel Roosevelt, New York. Association headquarters, 122 E. 42nd St., New York 17, N. Y.

American Society of Lubrication Engineers and **American Society of Mechanical Engineers**—Joint lubrication conference, Oct. 20-21, Sheraton-McAlpin Hotel, New York. Society headquarters, 84 E. Randolph St., Chicago.

American Standards Assn.—National conference on standards and annual meeting, Oct. 20-22, Sheraton-Cadillac Hotel, Detroit. Association headquarters, 70 E. 45th St., New York.

Association of Roller & Silent Chain Manufacturers—Fall meeting, Oct. 21-22, Hotel Roosevelt, New York. Association headquarters, 3343 Central Ave., Indianapolis.

Non-Ferrous Founders' Society—Annual meeting, Oct. 22-24, Bedford Springs Hotel, Bedford, Pa. Society headquarters, 1604 Chicago Ave., Evanston, Ill.


Quality...
Is more than a word at Ferry Cap.
It is the sum of hundreds of small but important
technological improvements — plus the pride of
the craftsman who strives always to make
his current effort his best one.
FERRY CAP
& SET SCREW COMPANY
2151 Scranton Road • Cleveland 13, Ohio
Cold upset screw products
...standards and specials.

Eyes Are Expensive Targets

THE AVERAGE EYE INJURY COSTS INDUSTRY $60.00 PER PRODUCTION WORKER PER YEAR...THAT'S MORE THAN TWICE AS MUCH AS THE AVERAGE COST OF THE SAFETY GLASSES THAT PREVENT INJURY

*In some cases over $100,000 annually

Write for your copy of new brochure "Eyes are Expensive Targets." Shows how America's leading companies are saving workers' eyes (and skills) and thousands of dollars* annually.

American Optical
COMPANY
SAFETY PRODUCTS DIVISION
SOUTHBRIDGE, MASSACHUSETTS
Safety Service Centers in Principal Cities

Always insist on Trademarked Lenses and Frames

Easy To Machine and Harden, Ideal For Intricate Parts

STARRETT No. 496 OIL HARDENING FLAT STOCK

Here is a deep hardening chromium-tungsten-vanadium tool steel with excellent non-deforming characteristics — ideal for intricate or thin section work where you normally worry about cracking or distortion.

Starrett No. 496 precision ground Oil Hardening Flat Stock and Die Stock is fully spheroidized for easy machining with a low (1450°-1500°) *non-critical* hardening range, exceptional deep hardening characteristics and fine grain structure. Available in a complete range of flat stock and die stock sizes through your Industrial Supply Distributor.

Your distributor also has Starrett *air hardening* and *water hardening* tool steel flat stock and die stock and Starrett *free machining-low carbon* flat stock, a fine grained, low carbon, silicon killed steel with 91% machinability. To save valuable man-hours and machine time, choose the exact widths and thicknesses you need from over 1000 sizes — then just lay it out and cut it out.

Ask your distributor for complete information — or write for Bulletins **1109 and 1110. Address Dept. IA, The L. S. Starrett Company, Athol, Massachusetts, U. S. A.**

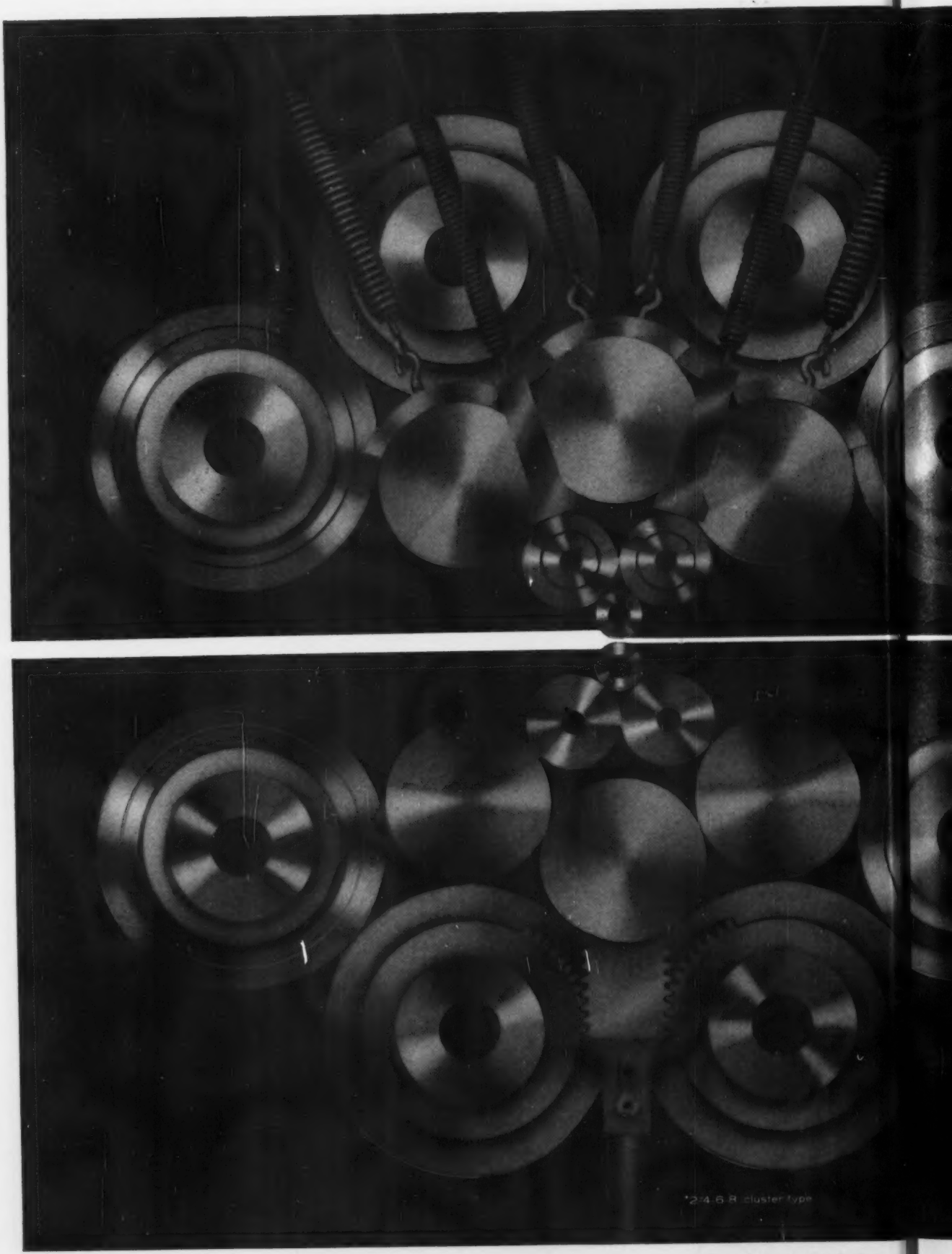
Starrett®

PRECISION GROUND FLAT AND DIE STOCK

World's Greatest Toolmakers

Starrett Precision Makes Good Products Better

PRECISION TOOLS • DIAL INDICATORS • STEEL TAPES • GROUND FLAT STOCK • HACKSAWS • HOLE SAWS • BAND SAWS • BAND KNIVES


*2-4-6-8 cluster type

PINPOINTED POWER

In Eastern's celebrated "Z" mill,* photo-diagrammed here, two highly finished, small-diameter work rolls pinpoint the combined power of eighteen progressively larger back-up rolls and bearings . . . to produce light gauge stainless steel sheets, coils and strip. This Sendzimir method of precision cold rolling achieves the deepest "bite" per pass . . . close-tolerance gauges down to .007" . . . widths up to 48" . . . a surface of uniformly superior quality.

Two years of "Z" Mill experience add to the assurance that Sendzimir-produced Eastern stainless steel will meet your specifications . . . accurately and always.

EASTERN STAINLESS STEEL

BALTIMORE 3, MARYLAND, U.S.A.

Chances of

SLIP-UPS

are sharply reduced with

HENDRICK MITCO GRATING SHUR-SITE TREADS

BECAUSE IT NEVER CLOGS

Hendrick Mitco Open Flooring is non-clogging because it has no bolts, rivets or acute angle joints that collect dirt and refuse. Its 90% open area reduces accidents by increasing in-plant light and visibility, too. What's more, it will not bend or warp because the self-contained Mitco lock is protected from corrosion, acid fumes, and other damaging elements. Nineteen sizes are available, including heavy-duty gratings that take even the roughest loads and continuous wear.

BECAUSE STEP EDGE IS PLAINLY VISIBLE

Hendrick Shur-Site Treads have a deep nosing bar bent back under the front edge of the tread. This patented feature makes the step edge highly visible and so minimizes accident risk. The bar is self-clearing—will not retain dirt, refuse or snow. The 90% open area of Shur-Site Treads will not obstruct light or air. Shur-Site Treads are available in standard sizes or in special widths and lengths, shipped ready to bolt directly to stair stringers. Write for further details today.

HENDRICK
MANUFACTURING COMPANY 37 DUNDAFF STREET, CARBONDALE, PA.

PERFORATED METAL • PERFORATED METAL SCREENS • WEDGE-SLOT SCREENS • HENDRICK WEDGE WIRE SCREENS • ARCHITECTURAL GRILLES • MITCO OPEN STEEL FLOORING — SHUR-SITE TREADS • ARMORGRIDS • HYDRO DEHAZERS • DISTILLATION COLUMN INTERNALS

YEAR
AFTER
YEAR . . .
. . . of continuous
SERVICE!
The test of any crane is in its functional operation year in and year out. That is why more and more of the industrial world is looking to ALLIANCE for rugged endurance and proven dependability. The quality of ALLIANCE gives you the greatest overall return for your investment. Year after year
ALLIANCE LEADS THE WAY

Give us the Runway...

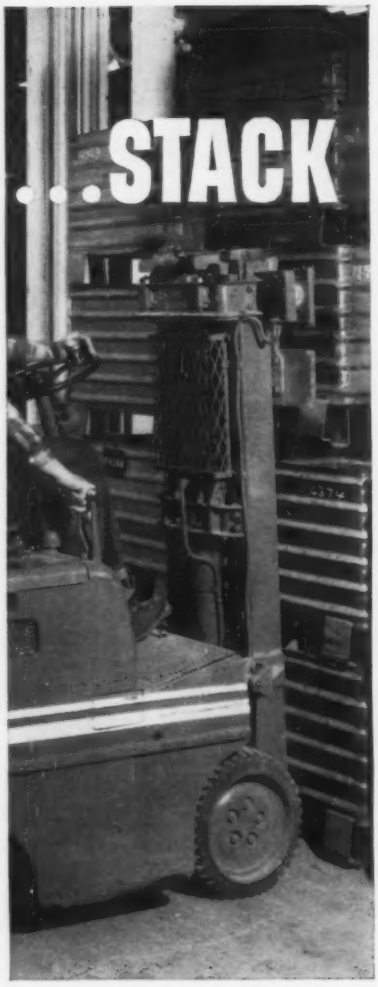
and We'll Lift the World.

the **Alliance**

machine company

Main Office Alliance, Ohio

Overhead Cranes * Gantry Cranes * Mill Cranes and Equipment * Hot Metal Cranes * Ladle Cranes * Stripper Cranes * Soaking Pit Cranes * Soaking Pit Cover Cranes * Charging Machines * Furnace Chargers * Slab Handling Cranes * Bucket Cranes * Magnet Cranes * Mold Yard Cranes * Skull Cracker Cranes * Ingot Buggies * Run-Out Tables * Car Dumpers * Special Mill Equipment * Ore & Coal Bridges * Loading & Unloading Towers Forging Manipulators * Forging Cranes * Power House & Dam Cranes * Dock & Pier Handling Equipment * Research, Development & Engineering Service * Licensees & Manufacturing Facilities in Other Countries



REPUBLIC MATERIALS HANDLING EQUIPMENT... saves time at Signode Steel Strapping

680 Republic Stacking Boxes in use and more on order!

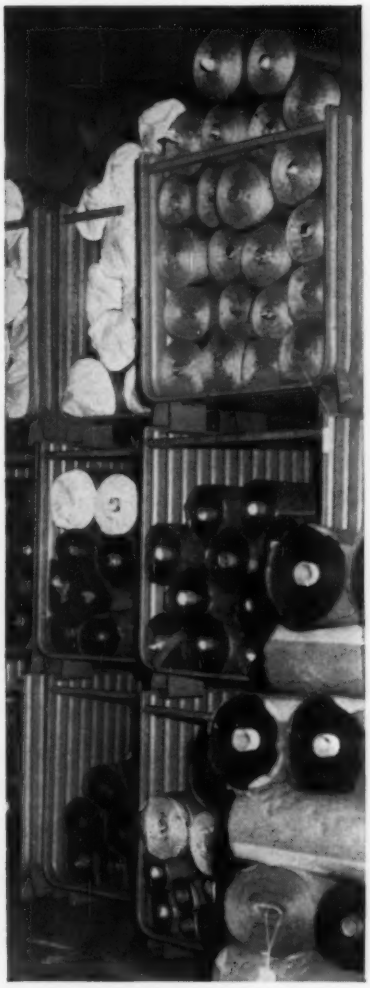
The Signode Steel Strapping Company, Glenview, Illinois, makes good use of these rugged boxes in the production of stretchers, sealers, cutters, power strapping machines, and seals. Signode, largest producer of such equipment in the U.S., knows that Republic Stacking Boxes speed materials handling while greatly reducing storage area requirements.

At Signode, boxes are filled with finished parts and stacked high awaiting production assembly or shipment. Stacking does not damage the boxes. Heavy-duty stacking brackets and corrugated box construction deliver long, efficient service at low per-year cost. In addition, four-way fork channels simplify handling in restricted space. Smooth flange around the top eliminates sharp edges.

Let the materials handling engineers of Republic's Berger Division work with you in solving your materials handling problems. Like Signode Steel Strapping, you'll find there are many new ways to save time, money, and storage space in your plant. Call your Republic representative or write direct.

REPUBLIC STEEL LOCKERS offer clean, attractive, dress-wash-change facilities. Interiors are spacious, well designed for convenience and ventilation. Bonderized to resist rust, retard corrosion, and provide better paint adhesion. Finish is baked enamel. Positive locking and heavy-duty steel construction assure protection of personal effects and tools. Made of steel, strong and sturdy. Attractive design. Mail coupon for data, prices, and delivery.

REPUBLIC METAL LUMBER® meets in-plant framing needs quickly, easily, and economically. Unique pattern of short slots allows complete flexibility and assures sufficient bolts in bearing to give adequate joint strength. Bonderized and finished in baked enamel after fabrication. Convenient bundles of 10 pieces, 10- and 12-foot lengths, bolts included. Simply plan, cut, and bolt to get the job done the new METAL LUMBER way. Send for complete details.



MATERIALS HANDLING EQUIPMENT FOR THE TEXTILE INDUSTRY reduces the problem of handling, transporting, and storing bolts of cloth. Open-end construction permits easy access to bolts. Offset channels under each unit permit tiering to any practical height, save space. Rugged, corrugated construction assures long, efficient life at lowest per-year cost. And, four-way fork channels simplify handling. Mail coupon for additional information.

REPUBLIC STEEL

World's Widest Range of Standard Steels and Steel Products

REPUBLIC STEEL CORPORATION
DEPT. IA -7597
1441 REPUBLIC BLDG. • CLEVELAND 1, OHIO

☐ Have a Materials Handling Engineer call
Please send more information on:
☐ Materials Handling Equipment
☐ METAL LUMBER
☐ Republic Steel Lockers

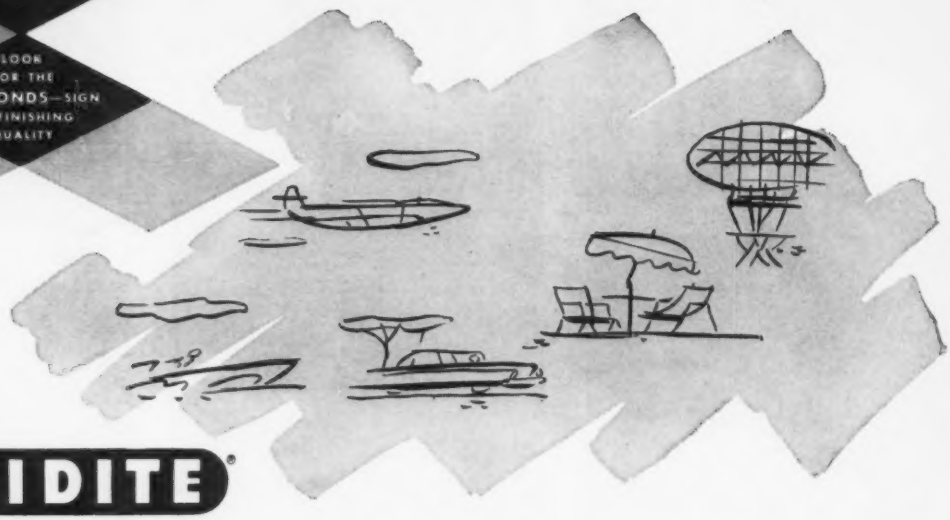
Name _____ Title _____

Company _____

Address _____

City _____ Zone ____ State ____

LOOK FOR THE DIAMONDS—SIGN OF FINISHING QUALITY



Only IRIDITE®

Process Engineered Chromate Conversion Coatings

Give you 5 additional benefits for Corrosion Protection—Paint Base—Decorative Finishing

1 A COMPLETE PROCESS ENGINEERED LINE

Developed for specific applications, there is an Iridite to provide the finish you desire, fit the equipment you have available and give the performance you require. Most Iridite coatings meet rigid military and civilian specifications.

2 EXPERIENCED TECHNICAL SERVICE

Our large field engineering staff is thoroughly familiar with chromate conversion coatings and related finishing operations. They'll help you check every step in your finishing operation to make sure you're getting the best possible finish on your products.

3 PRODUCT AVAILABILITY

Warehouses located in strategic industrial areas enable us to provide you with fast, economical delivery on any Iridite.

4 ECONOMY

The superior performance of Iridite provides low final cost by extending operating life and lowering maintenance costs. In addition, Iridite gives you a finish that adds considerably to the value of your product. There's an Iridite to meet every cost and performance requirement.

5 RESEARCH AND DEVELOPMENT FACILITIES

If you have an unusual application, we will gladly work with you. Our entire staff of experienced engineers and chemists, and our completely equipped facilities are at your service.

IRIDITE—a specialized line of chromate conversion coatings for non-ferrous metals. Apply by dip, brush or spray methods — at room temperature — manually or with automatic equipment. Forms a thin film which becomes an integral part of the metal. Cannot chip, flake or peel. No special equipment, exhaust systems or specially trained personnel required.

If you are using chromate conversion coatings to finish zinc, cadmium, aluminum, magnesium, silver, copper, brass or bronze — consider the above benefits of Iridite. For complete information, contact your Allied Field Engineer. He's listed under "Plating Supplies" in the yellow pages. Or, write for FREE TECHNICAL DATA FILE.

Allied Research Products, Inc.

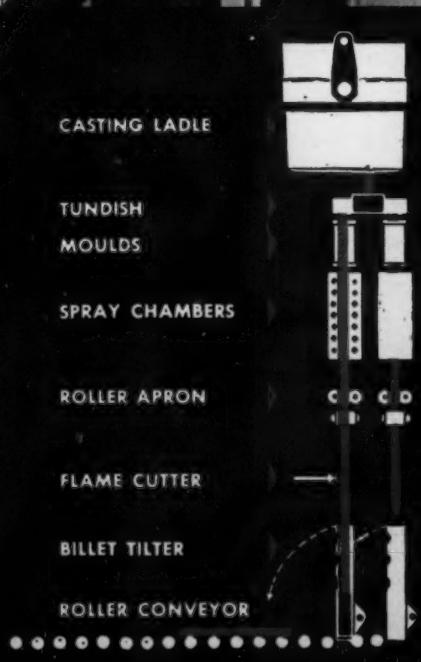
4004-06 EAST MONUMENT STREET • BALTIMORE 5, MARYLAND
BRANCH PLANT: 400 MIDLAND AVENUE • DETROIT 3, MICHIGAN
West Coast Licensee for Process Chemicals: L. H. Butcher Co.

Chemical and Electrochemical Processes, Anodes, Rectifiers Equipment, and Supplies For Metal Finishing

IRIDITE® Chromate Coatings | IRILAC™ Clear Coatings | ISOBRITE® Plating Brighteners | ARP® Chemicals & Supplies | WAGNER Line of Equipment

DEMAG

CONTINUOUS STEEL CASTING PLANTS



EIGHT-STRAND CASTING PLANT

in full operation at the Terni iron and steel works in Italy since 1958

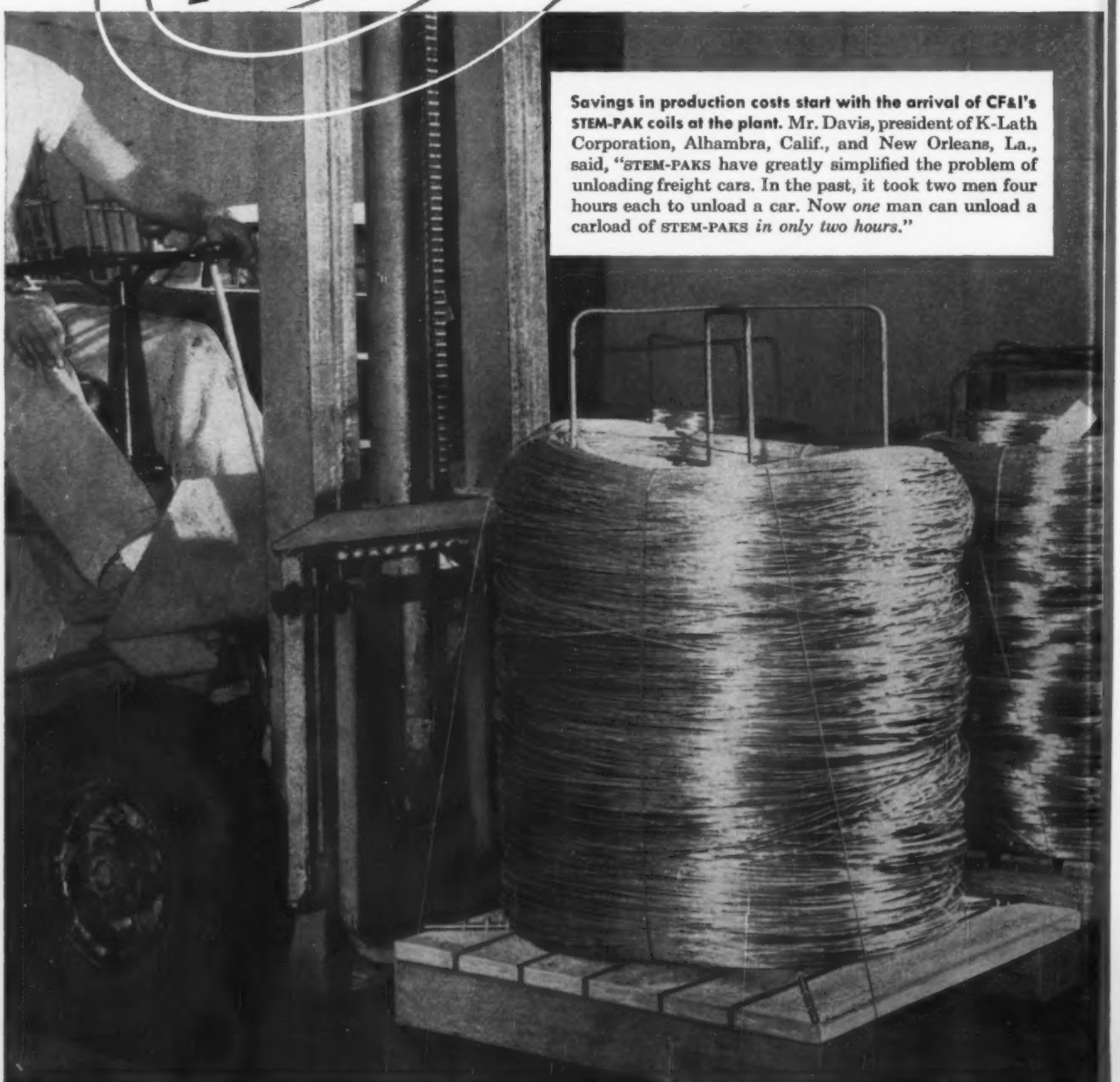
Developed to the Junghans system in co-operation with Messrs. Mannesmann and Böhler

DEMAG DUISBURG GERMANY

U. S. - Representatives:
AMERICAN DEMAG CORPORATION,
One Gateway Center, Pittsburgh 22, Pa.

CF&I Wire

PACKAGED for YOUR PRODUCTION



Savings in production costs start with the arrival of CF&I's STEM-PAK coils at the plant. Mr. Davis, president of K-Lath Corporation, Alhambra, Calif., and New Orleans, La., said, "STEM-PAKS have greatly simplified the problem of unloading freight cars. In the past, it took two men four hours each to unload a car. Now *one* man can unload a carload of STEM-PAKS *in only two hours.*"

helps K-LATH increase production 50%

Continuous production achieved by butt-welding the start of a new STEM-PAK to the end of a nearly expended PAK. This change-over takes less than 5 minutes. No machines are stopped. "STEM-PAK'S coils, which hold up to a half-ton of wire, permit us to run each machine as much as 1½ hours longer per day than when we used conventional coils," pointed out Mr. Davis.

K-Lath, an unusual type of lath made of kraft paper reinforced with CF&I Steel Wire, is finding wide acceptance among plastering contractors. "CF&I's clean, galvanized wire helps us to produce a brighter, better-looking product that appeals to contractors," explained Mr. Davis. "CF&I's excellent quality control also assists us in maintaining our own high standards of quality."

problem: "Our production machines are designed for the interlacing of kraft paper with galvanized wire," said Mr. Davis. "As we use about 370 miles of wire daily, our biggest problem was the time lost when we replaced the wire coils feeding our machines. The entire production line came to a halt each time we changed one of the coils."

solution: "Our request for technical assistance from CF&I was answered by a team of engineers," continued Mr. Davis. "These men developed the special STEM-PAKS which have aided us in achieving a continuous operation. Up to 75% of our production downtime — before we began using CF&I products—was caused by using too many small coils. STEM-PAKS hold 800- to 1,000-pounds of continuous, quality galvanized steel wire. These larger packages keep each machine running as much as 1½ hours longer per day. There is a minimum of tangled wire because STEM-PAKS allow free unwinding, without snarling. We have used CF&I STEM-PAKS to increase our production 50%."

Before you order wire, consider your own production problems. Then choose a CF&I wire package that can give you one or more of the following benefits:

- reduced downtime through extra-long lengths of wire
- simplified inventory control
- fast, economical unloading and in-plant handling
- assured cleanliness of the wire

Why not contact our nearest sales office today? Our technicians will be glad to visit you and discuss your packaging requirements.

CF&I—WICKWIRE WIRE

THE COLORADO FUEL AND IRON CORPORATION

THE COLORADO FUEL AND IRON CORPORATION—Abuquerque • Amarillo • Billings • Boise • Butte Denver • El Paso • Farmington (N. M.) • Ft. Worth • Houston • Kansas City • Lincoln • Oklahoma City • Phoenix Pueblo • Salt Lake City • Wichita • PACIFIC COAST DIVISION—Los Angeles • Oakland • Portland • San Francisco • San Leandro • Seattle • Spokane • WICKWIRE SPENCER STEEL DIVISION—Atlanta • Boston Buffalo • Chicago • Detroit • New Orleans • New York • Philadelphia • CF&I OFFICE IN CANADA: Montreal

CANADIAN REPRESENTATIVES AT: Calgary • Edmonton • Vancouver • Winnipeg

6284

The Aluminum Man*...

*Nine years a champion of the finest metals for industry, Robert H. Moffat, Alcoa Distributor Salesman for Ducommun Metals and Supply Co., is another of the men who make service to industry their careers, through knowledge of aluminum.

He helps reduce your tool and jig costs

Alcoa® Tool and Jig Plate . . . light in weight, easier handling, faster machining, meeting the exacting requirements of precision tool and jig work . . . is now readily available from local warehouse stocks. You can now receive immediate "from stock" delivery of the most commonly used alloys from your local Alcoa Distributor Salesman . . . *The Aluminum Man!*

Consider the use of this versatile Alcoa Cast Aluminum Plate in your own operations. It gives you more jigs, more fixtures, more dies per pound. Add the facts that it is easy to machine and has superior stability, flatness and high finish—and you'll understand why it has become the favorite of more and more decision-makers of industry. (Remember, too, that Alcoa *rolled* Aluminum Tooling Plate is also available for those jobs requiring exceptional high-strength utility.)

Call your *Aluminum Man* for specification data, technical information and suggestions on the uses and advantages of this and other Alcoa Aluminum Mill Products. His advice and help, reflecting the treasure of technical knowledge amassed by Alcoa, the aluminum pioneer behind these products, is yours for the asking on *any* size of order. Always specify *Alcoa Aluminum*—the light metal with the bright future that's being seen in more places—more and more!

ALCOA ALUMINUM
ALUMINUM COMPANY OF AMERICA

Call *The Aluminum Man.* He's your Alcoa Distributor Salesman for aluminum tool and jig plate, sheet, tube, shapes and all Alcoa Mill Products.

ALABAMA
Birmingham
Hinkle Supply Co., Inc., FAirfax 2-4541
The J. M. Tull Metal & Supply Co., Inc. . . . FAirfax 3-1612

ARIZONA
Phoenix
Ducommun Metals & Supply Co. BRidge 5-4471

CALIFORNIA
Berkeley
Ducommun Metals & Supply Co. THornwall 1-1820
Los Angeles
Ducommun Metals & Supply Co. LUdlow 8-0161
Pacific Metals Company, Ltd. RAymond 3-5431
San Diego
Ducommun Metals & Supply Co. GRidley 7-3141
San Francisco
Pacific Metals Company, Ltd. UNderhill 3-5600

COLORADO
Denver
Marsh Steel & Aluminum Co. KEystone 4-1241
Metal Goods Corp., DUdley 8-4141

CONNECTICUT
Milford
Edgcomb Steel of New England, Inc. TRinity 4-1631
Windsor
Whitehead Metals, Inc. MUrdock 8-4921

FLORIDA
Jacksonville
The J. M. Tull Metal & Supply Co., Inc. . . . EVergreen 7-5561
Miami
The J. M. Tull Metal & Supply Co., Inc. . . . NEwton 5-0365
Tampa
The J. M. Tull Metal & Supply Co., Inc. . . . 3-6741

GEORGIA
Atlanta
The J. M. Tull Metal & Supply Co., Inc. . . . JAckson 5-3871

IDAHO
Boise
Pacific Metal Co. . . . 3-6468

ILLINOIS
Chicago
Central Steel and Wire Company REpublic 7-3000
The Corey Steel Co., BIshop 2-3000
Steel Sales Corp. . . . BIshop 7-7700

INDIANA
Indianapolis
Steel Sales Co. of Indiana, Inc., LIberty 6-1535

KANSAS
Wichita
Marsh Steel & Aluminum Co. WHitehall 2-3231
Metal Goods Corp., AMherst 5-3191

KENTUCKY
Louisville
Williams & Co., Inc., JUniper 3-7781

LOUISIANA
New Orleans
Metal Goods Corp., JAckson 2-7373

MARYLAND
Baltimore
Whitehead Metals, Inc., EAstern 7-3200

MASSACHUSETTS
Cambridge
Whitehead Metals, Inc., TRowbridge 6-4680
Roxbury
Eastern Metal Mill Products Co. HIghlands 2-5900

MICHIGAN
Detroit
Central Steel and Wire Company TWinbrook 2-3200
Meier Brass & Aluminum Company JOrdan 6-3902
Steel Sales Co. of Michigan, TYler 6-3000

MINNESOTA
Minneapolis
Steel Sales Co. of Minnesota STerling 1-4893

MISSOURI
North Kansas City
Marsh Steel & Aluminum Co. GRand 1-3505
Metal Goods Corp. . . . GRand 1-3516
St. Louis
Metal Goods Corp., HArrison 7-1234
Steel Sales Co. of Missouri, Inc. PRospect 1-5255

NEW HAMPSHIRE
Nashua
Edgcomb Steel of New England, Inc. TUxedo 3-7731

NEW JERSEY
Elizabeth
Adam Metal Supply of New Jersey FLanders 1-2550
Harrison
Whitehead Metals, Inc., HUmbolt 5-5900
Hillside
Miller Steel Co., Inc., WAverly 6-6000
Kenilworth
Jones & Laughlin Steel Corp. MUrdock 6-6900

NEW YORK
Albany
Eastern Metals Warehouse, Inc., 89-3281
Buffalo
Brace-Mueller-Huntley, Inc. VIctoria 8700
Whitehead Metals, Inc., BEdford 3100
New York
(Brooklyn) Strahs Aluminum Company, Inc., BRowning 2-7000
(L. I. City) Adam Metal Supply, Inc. STilwell 6-7737
Henry B. Lust Inc., (circles) CIrcle 6-1748
Manhattan Brass & Copper Co., Inc. WOrth 6-1200
Whitehead Metals, Inc. WAtkins 4-1500
Rochester
Brace-Mueller-Huntley, Inc. COngress 6-6560
Metal Supply, Inc. . . . LOcust 2-4260
Sachs Metal Supply Co., FAirview 8-1710
Syracuse
Brace-Mueller-Huntley, Inc. HOward 3-3341
Whitehead Metals, Inc. HOward 3-6241

NORTH CAROLINA
Charlotte
Edgcomb Steel Co., FRanklin 5-3361
Greensboro
Edgcomb Steel Co., BRoadway 5-8421

OHIO
Cincinnati
Central Steel and Wire Company AVon 1-2230
Williams & Co., Inc. . . . CApitol 1-3000
Cleveland
A. M. Castle & Co., Nottingham Steel & Aluminum Division ATlantic 1-5100
Williams & Co., Inc. . . . UTah 1-5000
Columbus
Williams & Co., Inc., AXminster 4-1623
Dayton
Ohio Metal & Manufacturing Co. CLearwater 3-4192
Toledo
Williams & Co., Inc., GReenwood 5-8661

OKLAHOMA
Tulsa
Metal Goods Corp. . . . Temple 6-2561

OREGON
Portland
Pacific Metal Co. . . . CApitol 7-0693

PENNSYLVANIA
Philadelphia
Edgcomb Steel Co., GArfield 3-6300
Metal Supply Co., Center 6-0220
Whitehead Metals, Inc. BAldwin 9-2323
Pittsburgh
Williams & Co., Inc. . . . CEdar 1-8600
York
Edgcomb Steel Co. . . . 47-1411

RHODE ISLAND
Slatersville
Edgcomb Steel of New England, Inc. POplar 7-0900

SOUTH CAROLINA
Greenville
The J. M. Tull Metal & Supply Co., Inc. . . . CEdar 3-8366

TENNESSEE
Memphis
Metal Goods Corp., WHitehall 8-3407

TEXAS
Dallas
Metal Goods Corp., FLeetwood 1-3271
Houston
Metal Goods Corp. . . Republic 3-5441

UTAH
Salt Lake City
Pacific Metals Company, Ltd. DAvis 2-3461

WASHINGTON
Seattle
Ducommun Metals & Supply Co. PArkway 5-1500
Pacific Metal Co. . . . MAin 2-6925

WISCONSIN
Milwaukee
Central Steel and Wire Company HUmboldt 1-5000
Steel Sales Co. of Wisconsin HIlltop 2-2020

Aluminum Products Hawaii, Ltd., Honolulu 14, **HAWAII**

Aluminum Company of America, 939-K Alcoa Building, Pittsburgh 19, Pennsylvania

Pennsalt PLANNED SERVICE

helps you get higher efficiency, economy, quality

for **"a better start for your finish®"**

Pennsalt's Metal Preparation Service Plan gives you complete, personalized service by a nation-wide staff of trained specialists. You get periodic surveys of your processes . . . help in modernizing with automatic equipment . . . installation and start-up aid . . . laboratory analyses of your special problems . . . fast emergency service . . . plus other important aids to better finishing.

Service like this . . . exclusive from Pennsalt . . . is another way you profit from Pennsalt's "system approach" to metal surface preparation. Pennsalt supplies a complete line of quality processing compounds, and a plant-proved line of automatic surface treating machines . . . integrates chemicals, machines and service to help you get superior finishing with top economy.

Write Today

for your copy of this booklet on Pennsalt's Metal Preparation Service Plan, or see your Pennsalt representative for more information on Pennsalt service, materials or machines. Write to Dept. 159

METAL PROCESSING DEPARTMENT

PENNSALT CHEMICALS CORPORATION

East: 3 Penn Center, Philadelphia 2, Pa.
West: 2700 S. Eastern Ave., Los Angeles 22, Calif.

Pennsalt Chemicals
ESTABLISHED 1850

USERS OF **NEW**
ROEBLING HERRINGBONE* WIRE ROPE
HOLD THESE TRUTHS TO BE SELF-EVIDENT...

That Herringbone is the most practical and *needed* wire rope development to come along in years.

Herringbone, the regular lay and Lang lay rope, is actually two-ropes-in-one rope. Thus, the qualities that make these two ropes *good* ropes, combine to make Herringbone *excellent*.

HERE'S WHY:

The steel core of Herringbone provides the *ideal* support for the two pairs of Lang lay and one pair of regular lay strands used in its construction. In addition, the outer wires are heavier for extra abrasion resistance, and good flexibility is maintained by the finer wires inside. This combination of features enables Herringbone to give *longer service* in most applications.

Herringbone has been used on a wide variety of excavating equipment and tough hoisting jobs with impressive results. Its applications are practically unlimited on installations which call for all-steel ropes and on many where fiber core ropes are now being used. Another of Herringbone's added attractions is the fact that it eliminates the necessity for stocking Lang lay rope for one job and regular lay for another.

Your Roebling Distributor has Herringbone right now. He has, also, copies of a brochure describing Herringbone, the newest Roebling Star Performer. If you wish, write Wire Rope Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey, for literature and anything you'd like to know about Herringbone.

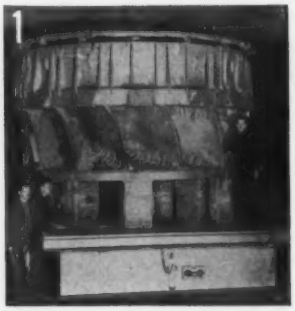
*Reg. App. For

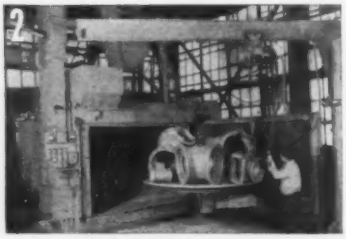
ROEBLING

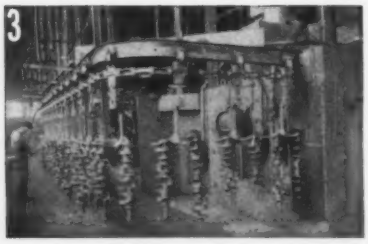
Branch Offices in Principal Cities
Subsidiary of The Colorado Fuel and Iron Corporation

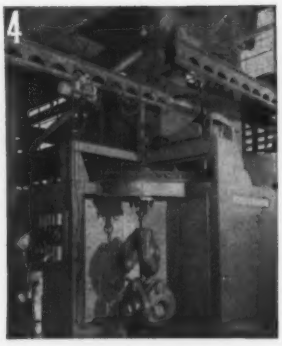
HERRINGBONE
WIRE ROPE

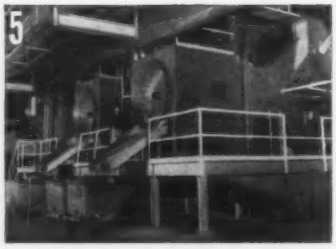
NO CLEANING JOB IS TOO TOUGH FOR WHEELABRATOR®

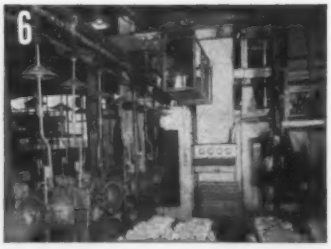












1. 70-ton casting, more than 16′ in diameter, cleaned in a Wheelabrator Car-Type Room.
2. Wheelabrator Swing Tables provide versatility in cleaning large and small castings.
3. Cleaning Shell Molded Crankshafts at production line speeds.
4. Versatile Spinner Hanger Cabinet handles wide range of castings.
5. No man-hours needed for cleaning in Wheelabrator Continuous Tumblasts.
6. Wheelabrator Monorail Cabinets clean large and relatively intricate castings at high production rates.

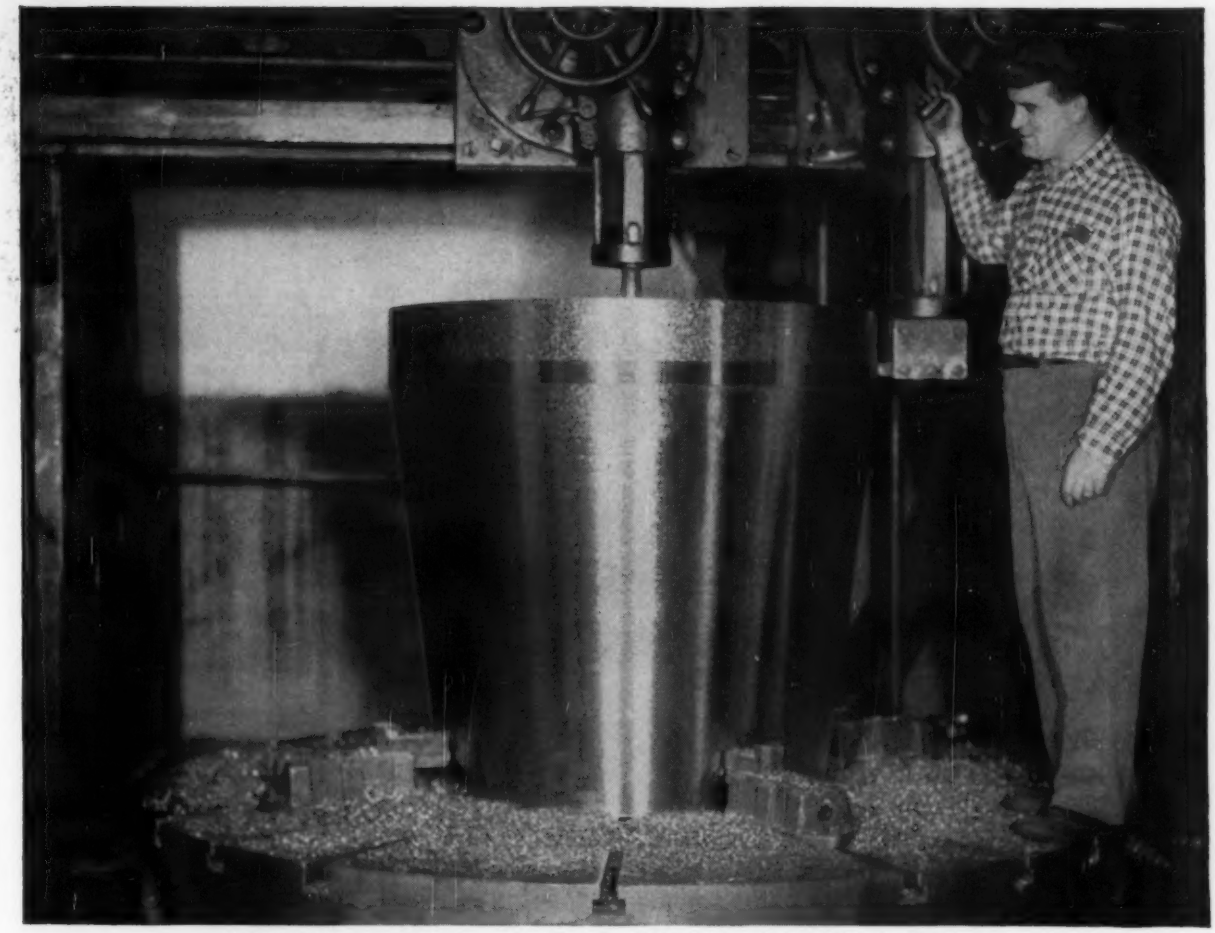
For the solution of your cleaning problem, you have at your disposal the richest background of practical cost-saving ideas in the blast cleaning industry. And the list of applications continues to grow as Wheelabrator research probes and explores to find better ways to solve industry's blast cleaning and finishing problems.

Write today for copy of the Handbook of Blast Cleaning Ideas — Catalog No. 143-D — to see some of the many examples of cleaning jobs solved with the Wheelabrator.

WHEELABRATOR
CORPORATION

510 South Byrkit Street, Mishawaka, Indiana
Canadian Division: P.O. Box 460 Scarborough, Ont.

Manufacturers of airless blast equipment, steel abrasives and dust control equipment



Five times longer service expected from Ni-Vee bronze filter cone. Cast by A. W. Cadman Mfg. Co., Pittsburgh, Pa. Finished and installed in 12" automatic self-cleaning strainer by S. P. Kinney Engineers, Carnegie, Pa.

Cone made of Ni-Vee* bronze to last 5 times longer in acid river water

The filter cone you see above is being readied for work in corrosive Monongahela River water.

That's why it's made of Ni-Vee bronze.

Expected life is at least five times longer than its predecessor, a grey iron cone now badly eaten away. Installed in a 12" automatic self-cleaning strainer, the Ni-Vee bronze cone will give long-lasting support to filter elements that remove solids from water used for blast furnace cooling.

Another important consideration in making this cone was machinability – all outer surfaces were drilled to receive filtering elements. Ni-Vee bronze easily met this need.

Versatile Ni-Vee bronze

Ni-Vee bronze does a multitude of industrial jobs. Five basic bronze compositions are available – Ni-Vee A, B, C, D, and E. They're modifiable to meet all industrial needs for brass and bronze constructional, pressure or bearing castings.

All the Ni-Vee bronzes deliver excellent "as cast" strength, improvable with heat treatment. (For example, Ni-Vee A bronze yield strength can be increased from 22,000 psi as cast, to 55,000 psi!) In addition, they supply easy castability, low shrinkage, pressure tightness, fine grain size and overall economy.

Each Ni-Vee bronze provides special properties. Type A gives extreme strength. Type D furnishes very high resistance to seizure and galling. All types show little dezincification or stress corrosion under corrosive attack.

Informative booklet on Ni-Vee bronzes

"Engineering Properties and Applications of Ni-Vee Bronzes" covers alloy compositions, strength properties, resistance to high temperatures, corrosion, wear, along with other helpful information. Write us for your copy. *Registered trademark

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street INCO New York 5, N. Y.

NI-VEE BRONZES

NICKEL MAKES ALLOYS PERFORM BETTER LONGER

"We've practically eliminated off-grade heats with MANTEMP ferromanganese"

An almost foolproof way to hit open-hearth manganese specifications consistently is with ladle additions of MANTEMP ferromanganese. Mill superintendents have reported that the alloy yields high recoveries and allows substantial reductions in overall ingot costs.

Fine grain size specifications can also be met easily because MANTEMP ferromanganese does not preferentially oxidize separately added aluminum. The alloy is available in both high- and medium-carbon grades, packed in cans containing exactly 40 pounds of manganese.

UNION CARBIDE METALS COMPANY, Division of Union Carbide Corporation, 30 East 42nd Street, New York 17, N. Y.

For further information, write for this new six-page MANTEMP ferromanganese bulletin.

UNION CARBIDE METALS

Electromet Brand Ferroalloys and other Metallurgical Products

The terms "Mantemp," "Electromet," and "Union Carbide" are registered trade-marks of Union Carbide Corporation.

THE CONTINUED HIGH RATE OF BUSINESS that has been sustained throughout the steel strike can't last forever. There is not much hope of avoiding a gradual letup--unless last week's breakoff of negotiations brings about a fast settlement. The inroads on the economy are too deep and too many people and industries are affected.

YOU CAN LOOK FOR SECONDARY LAYOFFS to multiply. Companies depending on steel mills for both supplies and markets are now seriously hurt. This will have an effect on the future buying plans of individuals and companies.

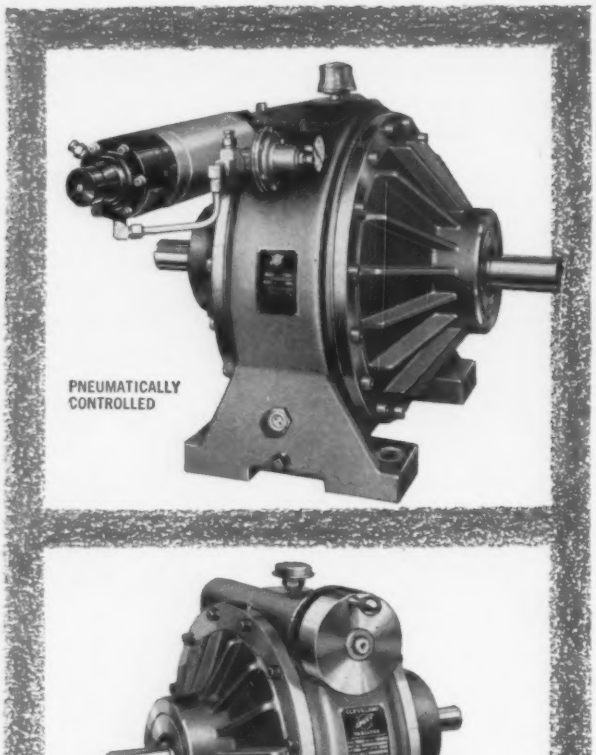
THE ECONOMY IS SURE TO SNAP BACK WHEN the settlement comes. But now there is more feeling that losses can not fully be regained. Until recently, general opinion was that, except for immediate losses to steel companies and steel workers, the strike would not seriously hurt the economy.

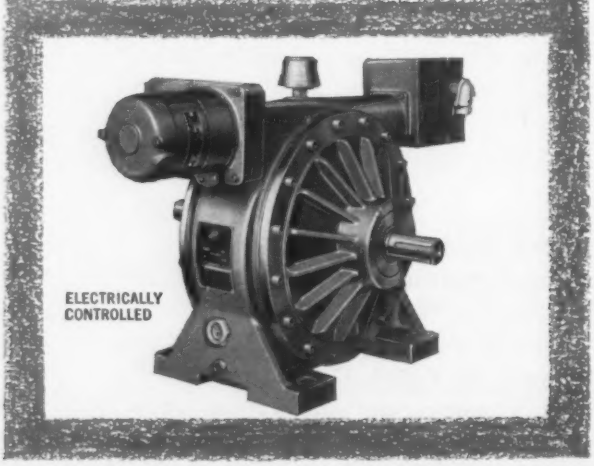
THIS FEELING OF PESSIMISM is not yet reflected in statistics. The Dept. of Commerce reports that demand and consumption remained high through September. Sales of major durables stayed at second quarter rates and capital investment is continuing to grow.

PERSONAL INCOME DID DECLINE in August. The adjusted annual rate of income during the month was $381.5 billion. This is a drop of $2.5 billion from the high reached in June and July. Most of the drop stemmed from steel strike effects, both direct and indirect.

AUTO PRODUCTION IS PICKING UP with the new models on the verge of introduction. Output for the week ending Sept. 26 was 86,402 cars and 21,357 trucks, according to Ward's Automotive Reports. This is up from last week's output of 62,716 cars and 19,903 trucks. Total for the year is 4,264,110 cars and 889,018 trucks. At this time last year, car output was only 2,859,790 and truck production 601,788.

THE BERYLLIUM INDUSTRY is coming back with a vengeance. About a year ago it lost most of its atomic energy markets, then its bread and butter. But capitalizing on new markets, the industry's sales will be more than triple the best previous year. The big push is coming from new uses in aircraft and missiles. The industry believes the potential is just being scratched. Greater knowledge of what the material will do, and new research projects, indicate a big future.





HOW IT WORKS

Power is transmitted from input shaft to output shaft through alloy steel driving balls which are in pressure contact with discs attached to the two shafts. Relative speeds of the shafts are adjusted by changing the positioning of the axles on which the balls rotate (see cutaway view, right).

with Cleveland Speed Variators... precision control is a simple matter

Cleveland Speed Variators — mechanical traction-type variable drives with stepless speed control — provide both increase and decrease of output speed on a range up to 9:1 from a constant speed power source.

Infinitely variable speed regulation is provided with instant, smooth change by either manual, automatic, or remote control. Precise adjustments are easily made with accurate adherence to settings. Some typical examples:

For the Chemical Industry
In rubber processing seventeen variators provide necessary process flexibility when changing production from one type synthetic rubber to another.

For the Automotive Industry
Variators give accurate control of assembly line speeds to control conveyor output rates.

For the Tobacco Industry
Variators make delicate adjustments for electronic beta gage controller.

For the Steel Industry
Variators provide remote control speed change on processing line conveyor.

For the Metal Working Industry
Variators permit fast, accurate adjustment of machining speeds for metals, from magnesium to 38 Rc steel.

For the Wire Products Industry
Variators control four reels simultaneously — and without slippage.

In Ore Processing
Variators easily adjust rate of material feed to hammermill.

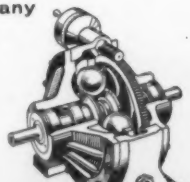
In Material Handling
Variators control movement of steel tubes through 176-roll annealing furnace.

The Cleveland Worm & Gear Company
Speed Variator Division
3282 East 80th Street, Cleveland 4, Ohio

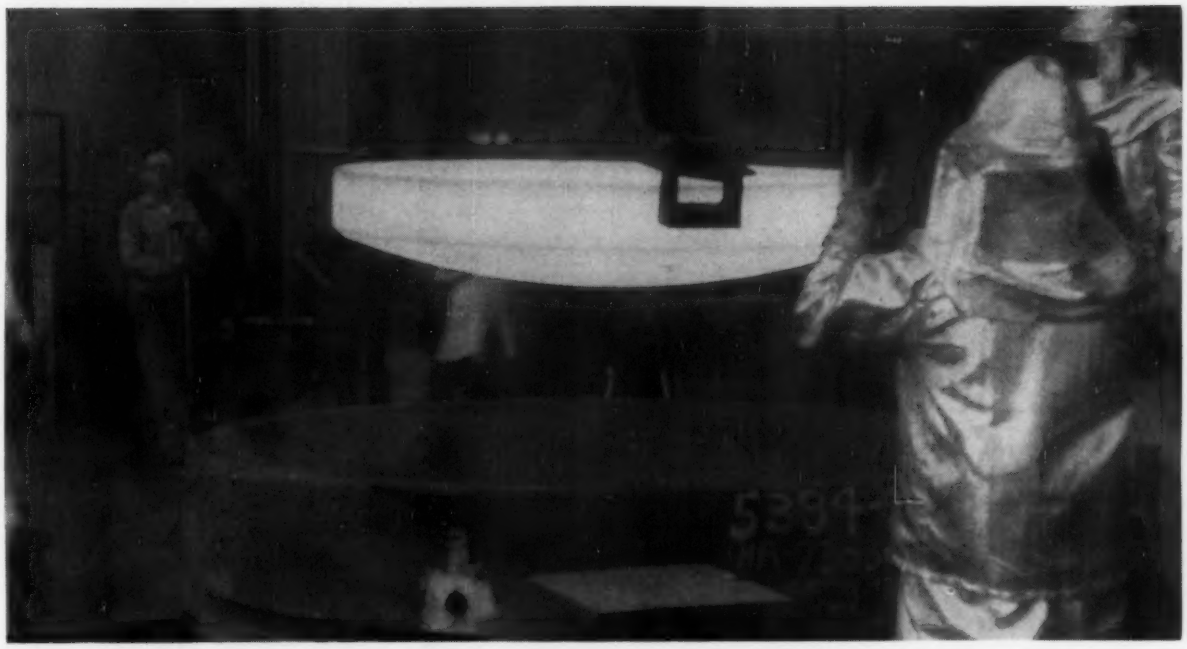
A subsidiary of
Eaton Manufacturing Company

Sales representatives in all major industrial markets.

Send for your free copy of Bulletin K-250. It gives the complete Variator control story.



CLEVELAND SPEED VARIATOR



SPACE METAL: Forging made of a Brush Beryllium billet will protect first U.S. man put into outer space.

Beryllium Charts a Course To New Markets

A year ago the outlook was grim and gloomy—plenty of beryllium and few customers.

Now, new uses are pushing sales to a new high, and the peak isn't even in sight.

▪ In the spring of 1958 the Atomic Energy Commission put the young, two-company beryllium industry squarely on the spot. The results have been amazing.

AEC cut back its 100,000 lb per year contracts with Brush Beryllium Co., Cleveland, and Beryllium Corp., Reading, Pa., by two-thirds. It was serious enough for the competitors to be stuck with over 60,000 lb each of high-priced ($71.50 per lb for beads) metal without any customers. But there were also complications:

Both producers had built new, privately-financed plants which had to be paid for.

Up to this time nuclear energy was the only major market.

The metal, used for neutron reflectors in reactors, required no particular physical characteristics. Neither producer really knew very much about beryllium.

Prospects Brighten — Within a year the picture has changed for the better. The industry is sure 1959 sales will more than triple the previous high. And one-third of this is for R&D projects, any number of which are likely to break through with new markets at any time, says Berylco sales vice president Lawrence Boland.

Berylco will top $20 million in sales this year, just about double last year's. Brush will hit about $12 million. About half of Brush sales will be commercial, nonnuclear applications. The total for this field last year was $2.4 million.

Defense Dept. Shows Interest— The first boost on the road to recovery came from the Defense Dept. The Air Force, particularly, was interested in the metal that is lighter than aluminum, stiffer than steel, has a high melting point and is commercially available. There are serious problems, but the Defense Dept. has agreed to take much of the metal. It is now spend-

ing close to $1 million yearly on beryllium research.

Takes to the Air—The next push came from aircraft and missile makers. "We used to get laughed at occasionally on sales calls when they found out the price," says Buford Sparks, Brush sales manager. "But it doesn't happen anymore."

"Nearly every aircraft and missile maker is now evaluating beryllium both as a structural material and for its heat sink properties," reports George S. Mikhalapov, Brush executive vice president.

Getting the Brakes—And they're coming up with some interesting things. One immediate probable new use is for disk brakes for heavy aircraft. These are similar to bicycle brakes involving a series of alternating stationary and moving disks along a shaft. Stationary ones are fixed to the axle, moving ones to the wheel. To stop, the disks are compressed.

It looks like the new B-70 Mach 3 bomber will have steel faced beryllium disks to dissipate the increased heat generated.

Earning Wings—Beryllium people feel certain that in the not too distant future leading edges for wings, and control surfaces for high speed planes will be beryllium. It would give the same rigidity as stainless steel, at one-sixth the weight.

Beryllium is setback sometimes because technology just can't wait for research. Beryllium and stainless foil were both checked out for honeycomb material on the new B-70 bomber.

Loses to Experience—Beryllium would have saved 20,000 lb in total weight. This would have meant greater speed and longer range. It would have cost $1000 per sq ft, against $250 to $300 for stainless. But stainless was selected because, among other things, more was known about this metal and its performance.

The beryllium people consider these setbacks only temporary.

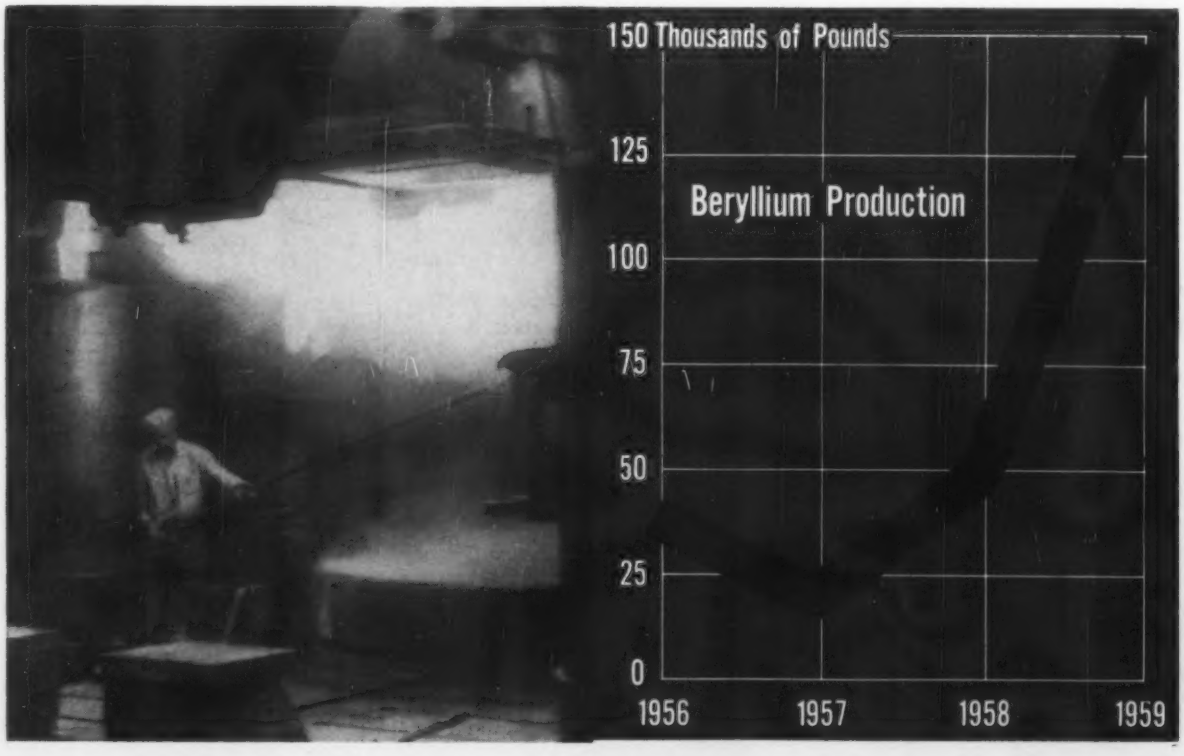
Instrument makers have been fertile ground for beryllium development, both in the air and on the ground.

Computer memory disks are being made of beryllium. These revolve as fast as 10,000 rpm with very close tolerance. Beryllium is used for its light weight and dimensional stability.

Aids Memory Machine—A few years ago an Eastern college professor pioneered a guidance system using beryllium to slash weight. Because of its lightness and rigidity, beryllium builds up less inertia. It takes less power to transmit small impulses. And it will take higher temperatures. Now missile guidance systems have hundreds of beryllium gear trains, housings and other finely machined parts.

Man in Space—Looking ahead, the beryllium people visualize space stations. They point out that beryl-

Beryllium Is Coming Back Strong



lium weighing one-onethousandths lb per cu. in. could carry a load of 1500 lb per sq in. in compression.

The floor, or heat sink for the mercury, the capsule that will carry the first U.S. astronaut into outer space and back, has already been made of beryllium. On re-entry the beryllium will soak up the friction-caused heat, eventually disipate it without losing its strength.

Lower Costs Sought—The two producers are tugging at their own bootstraps. Berylco, for instance, spends to $1.5 million per year on research. Most of this is aimed at better mill techniques and more consistent mill products. It's here that price is vulnerable.

"There's not too much room to lower the price of basic metal," says Brush's Mr. Mikhalapov. But Berylco people feel that there is a lot of room for improvement on finished component prices. "Two-thirds of the current price for most items could be cut by improvements in manufacturing techniques. There's a lot of work going on in this direction."

Undesirable Characteristics—All beryllium is hot pressed from powder. Billets and slabs for rolling and extruding are made this way. Castings have a coarse grain which results in the loss of what little ductility the metal has.

Beryllium parts are often hot pressed and then machined. Although beryllium machines easily, 800 to 1000 pct excess metal must be used. Berylco and Wyman-Gordon Co., Worcester, Mass., are cooperating on a project to come up with efficient methods for forging beryllium. It aims at using only 200 pct more than the weight and size of the finished part.

Shortage of Sheets—Right now, beryllium sheets are available, but barely. As the metal is rolled its strength builds up in the direction of rolling at the expense of the other direction. So beryllium sheet must be cross rolled. Also, the slab is made more expensive by hot pressing.

WHY: Beryllium Corp.'s sales head Lawrence Boland (center) tells R. W. Hardy, Convair Div. of General Dynamics Corp., why part should be beryllium. Assisting is William Santschi, head of Berylco Metal R&R.

Sheets are the major mill product in most metals, so the makers would view any real improvement here in the nature of a breakthrough. Berylco is trying to come up with a direct casting of a billet or slab under a prime Air Force contract.

The company is "satisfied with its progress." They haven't got the answers yet, but they say "we wouldn't have taken the contract if we didn't think we could crack it."

Slowed by Steel Strike — The second half of the problem, actual rolling, is stymied until the steel strike is over. Berylco is working with Allegheny Ludlum at its Brackenbridge, Pa., plant on this problem. A major rolling was just about ready when the steel strike hit. Many think some big answers are right around the corner.

Extrusions are usually steel jacketed at about 1800 degrees F. But Brush has been experimenting, rather successfully it says, with bare extruding at 700 to 900 degrees F. Better lubrication seems to be the key.

Problems to Solve—What problems still need attention?

Newly dicovered information about beryllium should be spread around more, says Berylco. Battelle Institute has been commissioned as the clearing house for all beryllium information, but many potential customers don't know this, says Berylco.

"Beryllium needs a new school of design to get the most from its properties," says Brush's George Mikhalapov. "For example, a sheet will snap if bent. Yet, if lapwelded together it will not. And if two riveted sheets are pulled apart, the holes will stretch like plastic."

What Makes a Good Plant Site?

People Are as Important as Terrain

Rockwell Manufacturing has experienced an extensive expansion and relocation program.

Before making its choice, the company studies all sides of the question.—By G. J. McManus.

▪ There's more to choosing a new plant location than water supply, transportation and nearness to markets.

Many companies, in re-locating and expanding, learned the hard way that these accepted factors are only part of the problem. They have paid the price in high labor turnover, high absenteeism, and endless personnel problems.

Expansion Minded—Since 1950, Rockwell Manufacturing Co. has added 10 U. S. plants, bringing its domestic total to 22. In surveying new communities, Rockwell has developed fairly specific standards as to the size and type of community it favors.

H. L. Stuckman, vice president, plant location, says there are sharp differences in people from region to region and even from town to town.

These differences affect prospects of a new plant and they can't be picked up by talking to official greeters.

Background Important — "Your industrial development groups are pretty much the same wherever you go," says Mr. Stuckman. "They are made up of bright community leaders. But before talking to them, we like to have some background on the town.

Mr. Stuckman frequently will spend hours going around a possible new city site. He will talk to the people, getting a view of local customs and habits.

Selective Hiring—Towns considered must have enough people to provide a good labor selection. Rockwell likes to get at least three or four applicants for every new job. And the community must be big enough to stand on its own feet. "We want to be neighbors rather than squires," says Mr. Stuckman.

On the other hand, Rockwell does not want to be swallowed up in big industrial concentrations. Apart from the question of company influence, industrial buildups can create unpleasant working conditions. In one large city, girls are sent home by 4:30 p. m. to avoid the hazards of after-dark travel.

Interest in People—Most of the newer Rockwell plants are in towns of about 10,000. All the people in a town are of interest to the company when it goes site seeking. Potential employees are a prime concern. About nine years ago, Rockwell was considering a new plant for its Delta line of power tools. Fantus Factory Locating Service, employed to survey sites, came up with a report highly favorable to the South in general and to Mississippi in particular.

Rockwell was surprised but began digging into the report and into the towns suggested. As a general regional thing, it found Southerners are conservative in their living ways and deeply rooted.

A Good Decision—These and many other considerations led Rockwell to choose Tupelo, Miss., for a plant site. The company feels

Why Site Studies Are Important

These are Rockwell figures showing turnover and absenteeism for each 100 employees. They are typical plants in widely separated areas and tend to show how rates can vary between geographical areas.

Division	Turnover 1958	Turnover Year-to-Date	Absenteeism 1958	Absenteeism Year-to-Date
Barberton, O.				
Valve Plant	4.21	3.47	1.94	2.60
Tupelo, Miss.				
Power Tool Plant	.90	.75	1.53	1.99
East Chicago, Ill.				
Valve Plant	2.40	1.40	2.43	3.32
Sulphur Springs, Tex.				
Valve Plant	3.21	2.19	2.37	1.56
Porterville, Calif.	6.10	.20	1.57	2.18

its decision has paid off. Workers quickly picked up the skills needed for tool manufacture. Employees showed an individualistic pride in their work. Incentive pay is used and there is no question of anyone's slowing down to conform to the general tempo. Union failed to make headway.

Labor is one of the big attractions of the South, Mr. Stuckman says. But this is not primarily a question of low rates or non-union disposition. He feels Southern sites have given good worker performance with low turnover, low absentee rates and generally trouble-free operation.

The Leaders' Role—Community leaders are important to a company both in preliminary and operating periods. At established industrial centers Rockwell has found town officials can grow complacent about company welfare. When Rockwell moved part of its operation from a West Coast center, it was the fourteenth company to leave town. Yet no one came around to ask why the firm was moving out.

At the other extreme, Rockwell feels job-hungry towns can go too far in concessions to industry. "We shy away fast when they start leaning on giveaways and unrealistic special inducements," says Mr. Stuckman.

Southern Hospitality — At Russellville, Ky., Rockwell found a good balance of cooperation and selectivity. When the company was studying the site for a die-casting plant, it found Russellville had done a businesslike job of lining up land and information. The town was equally thorough in checking Rockwell before welcoming the company.

At Uniontown, Pa., which has strong union tradition, the company invited United Mine Workers to organize the plant. In staffing a new plant, Rockwell brings in only about 5 to 10 pct of personnel from existing operations. Rockwell men are encouraged to mingle with the public; newcomers may not live next door to one another.

Cross Strike Gains National Import

U. S. Circuit Court orders unprecedented hearing between the National Labor Relations Board and the Cross Co.

Special equipment manufacturer refuses to bargain with union, saying it doesn't represent workers.

▪ Until now, a strike at the Cross Co., Fraser, Mich., has held little more than local interest. But it has now taken on national significance. Although it normally employs fewer than 300 hourly-rated workers, the company is one of the nation's largest manufacturers of automation machinery.

On Oct. 5, an unprecedented hearing between Cross and the National Labor Relations Board will be held at the U. S. Sixth Circuit Court of Appeals in Cincinnati.

Another Kohler? — Michigan's Gov. G. Mennen Williams says the situation "has all of the makings of another Kohler case." The Kohler strike in Kohler, Wis., began in April, 1954, and is still in progress.

But unlike the Kohler incident, which involves economic principles, the Cross strike centers on unfair labor practice charges and union representation.

What They Claim—Cross says there is but one issue—whether or not the majority of its employes want Local 155 to represent them. "We cannot legally bargain with the union," company officials say, "unless we firmly believe it represents a majority of our employes."

The UAW says the strike action against Cross results from constant refusal by the company to meet and bargain with Local 155, which it says represents the firm's employes.

Elections Certified — NLRB has twice certified the Local as exclusive bargaining agent for Cross workers. It was first certified on April 23, 1957, following an eight-week strike. That contract ended Oct. 1, 1958.

Shortly after the contract expired a group of employes filed for a decertification election. They claimed Local 155 no longer represented Cross workers. An election was held last Nov. 12 and the union won.

Workers Appeal—The result of the election was appealed and denied in March by a regional Labor Relations Board. Another appeal made to the Board in Washington, was denied on June 4. A reconsideration of both appeals was denied on June 22. On July 7, Cross Co. went into U. S. Circuit Court and asked for a writ of mandamus against the NLRB. The strike began Aug. 4.

In an unusual move, the Appeals Court ordered the NLRB to join in a hearing with Cross Co. on Oct. 5. Cross will try to have the election conducted by the NLRB on Nov. 12, 1958, declared void.

Unusual Court Action—A writ of mandamus ordering the NLRB to order another election will also be sought. The company says the Court action in ordering the hearing indicates the company has been justified in refusing to bargain with the union.

The unusual aspect of the hearing is that Cross sought a review of the election case through issuance of a writ of mandamus. Normally, an election and certification issued by NLRB is not reviewable unless unfair labor practice charges have been filed.

Talks Break Off; It's up to Ike

President "Sick and Tired," Promises Action

T-H inevitable unless the President's personal appeal brings a break in the deadlock.

But both sides were irreconcilable when talks broke off last week.—By Tom Campbell.

▪ President Eisenhower made a last-ditch personal appeal for both sides in the steel strike to break the impasse. Unless it succeeds, invoking the Taft-Hartley Act is inevitable.

Positions in the steel negotiations were irreconcilable after the breakup of negotiations last week. It was against this firmness that the President made his appeal.

To the White House—The President asked union and company leaders to come to the White House Wednesday a.m. for separate talks on the issues.

Company representatives are: Roger M. Blough, Chairman of U. S. Steel; Arthur B. Homer, president of Bethlehem; Joseph L. Block, chairman of Inland; Avery C. Adams, chairman of Jones & Laughlin; Charles M. White, chairman of Republic, and R. Conrad Cooper, U. S. steel executive vice president and chief negotiator.

The company delegation will appear first, followed by Steelworker president David J. McDonald, and other union representatives.

If it comes to T-H, there is some speculation about what form the industry's "last offer" should take.

(If there is no settlement, 60 days after a T-H injunction, a last offer must be readied by the companies for a secret vote among steel workers.)

Some steel executives admit, privately, that putting the eight points, along with the explosive local practices clause, in plain English for a ballot, would be a tricky problem.

Talking these points over with experienced bargainers is one thing. Putting it on a ballot for the average union member to vote on is another.

Problems to Be Solved—The big problem in breaking the deadlock remains the controversial Section 2B (Local Working Conditions) of the contract. Especially critical is the sentence that says: "Nothing in this section shall prevent the companies from establishing a more efficient operation."

In re-writing the section, this is one of the points the companies want to insert into the contract.

The unions say this would allow the companies to set up any practices they want and to eliminate any practices they don't want.

The companies say the union is over-playing this question in an effort to sour the employees on the companies' proposal to regain some management prerogatives.

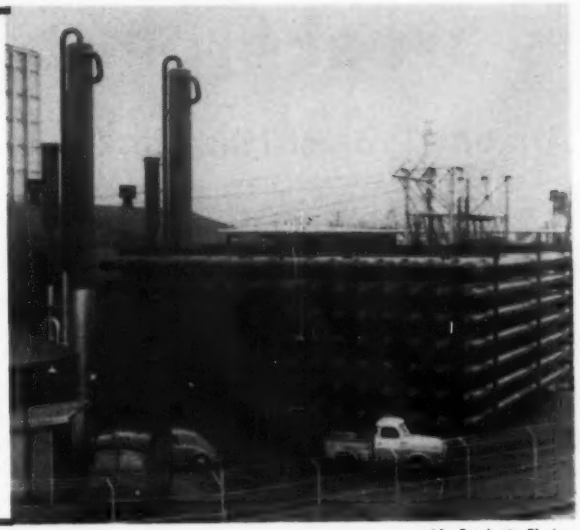
Eight Point Attitude — Union officials have made it clear to rank-and-file and to all officers that they are equally opposed to the so-called eight point program. Their argument is that it will take away everything the union has won in bargaining over the past 23 years.

Old-time observers claim the steel side handed David J. McDonald, Steelworkers president, a gold-plated assist when the eight points were thrown on the table. This comes from steel officials as well as union people. The argument is that the rank-and-file feeling, which has wavered from Mr. McDonald, is now against the companies.

BEFORE THE BREAKUP: Sub-committees from steel industry and union locals talked for days, with no apparent results, U. S. Steel vice president, labor relations, J. W. Shaver, left, talks in Hotel Roosevelt corridor with Elmer Trapp, Steelworker staff worker.

Oxygen in Steelmaking, Consumption By Use, 1958 (Millions of cu ft)

Conditioning	6,051
Scrap Preparation	1,065
Burning and Welding	1,983
Blast Furnaces	5,867
Steelmaking	13,049
All Other	810
Total	28,834



Air Products Photo

New Uses Create Oxygen Boom

Steel industry uses 60 pct of all high purity oxygen produced.

Oxygen production has doubled since 1955 and will continue to climb in the next several years.

▪ The surge in steel plant oxygen use is bringing a boom to builders and operators of tonnage oxygen plants. Steel industry oxygen use reached a peak of 28.8 billion cu ft (gaseous) in 1958, and substantial future uses are assured.

The greatest portion used by mills was in steelmaking furnaces. Last year over 13 billion cu ft, or 338 cu ft per ton of steel produced, were used. This almost doubled 1955 consumption. Oyxgen roof-lancing in openhearths and use in electric furnaces accounts for the growth. These applications will continue to grow.

Long Range Users—Basic oxygen converters, however, are expected to be the largest long-range users of the gas. The converters require about 2000 cu ft of oxygen per steel ton produced. And Weirton Steel Co. is pioneering in the use of oxygen in blast furnaces.

Steel mills use about 60 pct of high purity oxygen produced. The industry is also a major factor in the additional 12 pct used in welding and cutting.

Bright Future — Air Reduction Co. predicts that oxygen production will grow about 12 to 15 pct in each of the next several years. And most of this new capacity will be used up by the steel industry.

Union Carbide Corp.'s Linde Co., for example, is building a 2.5 million cu ft per day plant at U. S. Steel Corp.'s Duquesne Works. It will serve Duquesne, Homestead, the Edgar Thompson Works and National Tube Div. Linde is also building or enlarging plants for U. S. Steel at Fairless, Gary, and Columbia - Geneva. Air Reduction is building plants at Lorain and Birmingham for the same company.

Growing Production—Air Products Inc., Allentown, Pa., is building four major oxygen plants whose production will equal 50 pct of the 1958 steel industry consumption. Plants will be at Pittsburgh and Cleveland for Jones & Laughlin Steel Corp.; Granite City, Ill., for Granite City Steel Co., and Weirton for Weirton Steel Co. The latter plant will be the largest of the four.

Air Reduction is also building a plant at Butler, Pa., for Armco Steel Corp. and another for San Francisco Steel and Metalworking at Richmond, Calif. Linde is building a plant at Escorse, Mich., for Great Lakes Steel Corp., and one at Coatesville, Pa., Lukens Steel Co.

Bethlehem Expanding — Bethlehem Steel Co. has confirmed to The IRON AGE that it is considering an additional oxygen plant at its Lackawanna Works for scarfing and openhearth use, but has not reached a final decision. Lackawanna already has three openhearths equipped with oxygen. The company adds that it is carefully watching the basic oxygen converter against future expansion.

The majority of the plants mentioned will be on steel mill property. Construction has been halted because of the strike and operators foresee a period of shortage after the strike is settled. There will be a great demand for oxygen despite the unfinished plants, they say.

Is Steel From Slag Practical?

Arizona Project Has Marketing Drawbacks

Proposed steel mill planned by Webb & Knapp would use iron recovered from copper slag.

While method is technically sound, there could be cost and sales problems.

■ Is it economically sound to produce steel from waste copper slag? Industry discussion was touched off by word Webb & Knapp, Inc., plans to make steel from iron recovered from copper slag piles in Arizona and Montana.

The realty company owns a copper smelter at Clarkdale, Ariz., together with a 30,000,000 ton slag pile. A subsidiary company, Webb & Knapp Strategic Corp., has been formed to construct and operate an integrated steel mill at the site.

From Slag to Steel—Through a process developed by the Strategic Materials Corp., iron will be extracted from the slag and converted into steel for use by the mill. Strategic will receive a 15 pct equity interest in Webb & Knapp Strategic Corp. In exchange it will give the new company world-wide rights to use the recovery process on copper slags. Webb & Knapp will own the remaining 85 pct.

The plan hinges on whether Webb & Knapp can raise the $15 million financing needed to build the mill and the recovery plant at Clarkdale.

Koppers Co., Inc., will conduct the engineering and research for the mill. According to plans the mill, with an initial capacity of 500 tons of steel a day, will manufacture reinforcing rods and other "merchant mill" products.

Zeckendorf Steel Co., a subsidiary of Webb & Knapp Strategic Corp., will operate the mill.

Some Doubts — Steel industry sources believe the proposed operation is entirely practical from a technical standpoint. But there is some question about its economic soundness. Main doubts center around costs, market area for the mill, and the products to be produced.

The Strategic-Udy process is considered an economical method of making steel. But it is not commercially sound to produce steel in the quantities mentioned for the Clarkdale mill for volume product lines. The same steel could be made at much lower cost by using blast furnace iron.

In addition, the new process will use selective smelting, taking off the copper first and then refining the iron slag separately. Steel men say this can be done, but it's expensive.

Products mentioned for the Clarkdale mill — reinforcing rods, wire, nails, and fencing—are those on which low-cost tonnage mills are now losing out to imported steel. The planned product range puts the new mill in the low-price, competitive market. Most of the small, high-cost U. S. mills compete in the market for high-priced specialty products.

Another Mill Planned—Webb & Knapp has also announced it will buy large quantities of slag at another location—Anaconda, Mont., —from the Anaconda Co. Plans call for the building of a second steel mill there. Besides an existing slag pile of 40,000,000 tons, an additional 1000 tons of hot slag daily would be available from Anaconda's smelting operations.

SITE FOR STEEL MILL: Slag pile in foreground is the 30,000,000 ton source of iron which Webb & Knapp Strategic Corp. plans to convert into steel for proposed mill at Clarkdale, Ariz. Abandoned copper smelter in back would be used in constructing the new mill.

OLDSMOBILE: From every angle, the lines are new with hood and trunk blending into the fenders.

CHEVROLET AND CORVAIR: A family resemblance is seen in the Chevrolet (rear) and Corvair.

1960 Cars—Plain and Fancy

U. S. automakers will show off just about all of their new cars within the next two weeks.

Here's a look at a few of them. They range from one of the highest priced to one of the lowest.

▪ In the next two weeks, the American automakers will introduce just about all of their 1960 model automobiles. (For the dates, see p. 56.)

The industry predicts sales in the coming year will reach between 6 and 6.5 million domestic cars. And with the new models, each company hopes to increase its share of the market.

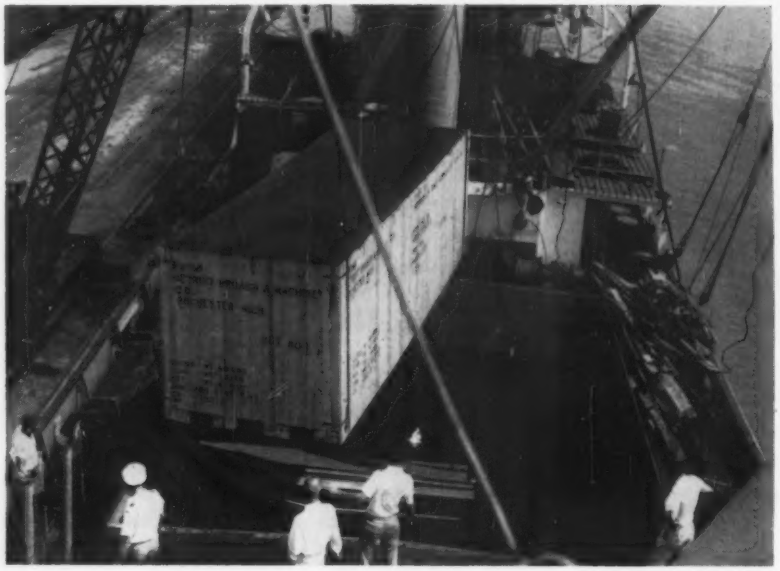
Competition will be keen. Four new makes join the 20 already doing business. Three of them—Corvair, Falcon and Valiant—are smaller and lower-priced than most present cars. The other, the Dart, will be priced right along with the no longer "low-priced three".

Many of the 1960 cars can truthfully be called "all-new". Others have been extensively restyled. Here's a look at a few of the cars to make the earliest appearance. They range from one of the highest price makes down to one of the lowest.

IMPERIAL: A special slender rear window treatment gives this LeBaron four-door Southampton a distinctive town car look.

PONTIAC: Smoother styling and a new series, the Ventura (rear) are features of the line; in the foreground, a Bonneville convertible.

DODGE: New styling, new body and new model names highlight the 1960 line. This is the Matador series; the other new name is Polara.



Big Broach Finds Export Market

▪ Detroit Broach and Machine Co. turned the tables on its European competitors and proved that despite obvious handicaps the American machine tool industry is far from out of world markets.

The Detroit-based company sold a 20-ton broaching machine to a West German automobile maker. The machine, believed by its maker to be the largest of this type in the world, will broach precision engine parts.

Detroit-to-Germany—The $100,000 cargo was loaded, in two specially braced crates, aboard the S.S. Transerie at the Detroit Marine Terminal and dispatched to its European buyer via the St. Lawrence Seaway. (See photo above.)

"We feel sale of this machine to a European manufacturer is a major step toward encouraging increased export of Detroit area designed machinery abroad," says Gustave Von Reis, president of Detroit Broach.

Tough Competing Overseas—"High production costs and increasing business taxes have already jeopardized export of Detroit-area built industrial machines to a large degree."

The new machine is designed to perform seven simultaneous broaching operations on auto connecting rods and caps. Each rod is pulled by a motorized chain through a tunnel at 33 ft per minute.

How It Works—A series of cutters machine the parts to specifications automatically. Oil solution under pressure washes the rods and cutting tools to carry away steel chips and dissipate the heat generated.

Also, the machine is designed so that new tunnels and broaches can be attached quickly to maintain production while the original set is removed for sharpening.

The machine is 39 ft long, six ft wide, has a 120 in. horizontal work area.

AMF Lands Contract

American Machine & Foundry Co., New York City, has landed a $42.6 million contract from the Air Force.

AMF will build, install and test the first 18 operational underground launching systems for the Titan intercontinental ballistic missile.

The actual manufacturing of equipment will be at AMF's Buffalo, N. Y., plant. The installation and testing will be at Lowry Air Force Base, near Denver.

Equipment will include the launching platform (stored underground and raised for firing), fuel storage, guidance antenna, and electronic control centers.

This contract raises the total AMF business for Titan launching systems within the past year to over $85 million.

U. S. Steel President W. F. Munford Dies

Walter F. Munford, president of U. S. Steel Corp., died Monday at Cape Cod, Mass., Hospital. He was 59 years old.

Mr. Munford had been president and chief administrative officer of U. S. Steel, a member of its board of directors and chairman of its executive committee since May 5 of this year.

Largest Aluminum Pipe

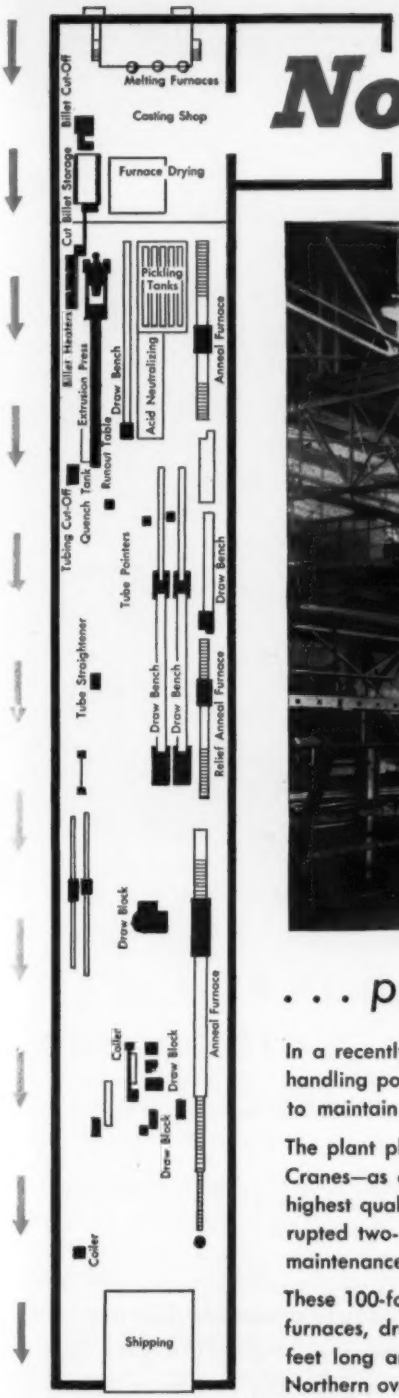
Superior Oil Co. is planning a 16-in. aluminum pipeline in its operations on Lake Maracaibo, Venezuela.

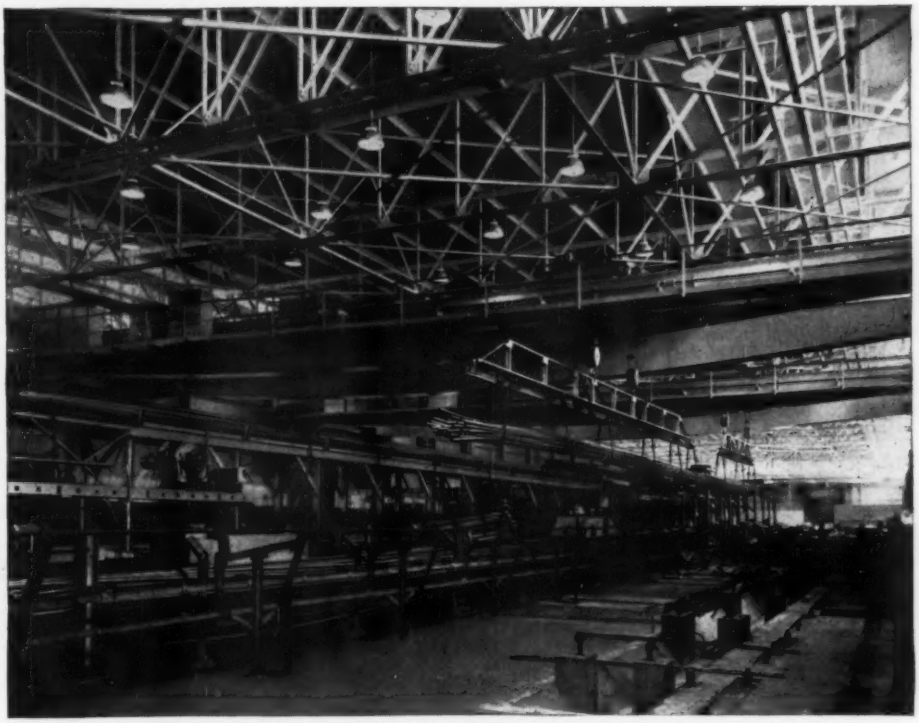
Reynolds Metals Co., supplying the 25,700 lb of 5083-Hii3 aluminum for the project, says this will probably be the biggest aluminum pipeline ever built.

Graver Tank Corp., E. Chicago, Ind., will fabricate the pipe from ¼-in. plate.

The line will be able to deliver 2000 gal. of water per minute to fire protection equipment.

Northern Cranes





. . . preferred in a large tube mill

In a recently built tube mill all production operations are planned around the most effective handling possible of materials and work. The two overhead cranes shown above are essential to maintain production in this plant; it cannot function without them!

The plant planning staff, after comprehensive study and investigation, decided that Northern Cranes—as evidenced in many other strategic, similar installations—provided the substantial, highest quality engineering design and construction necessary for fast, dependable, uninterrupted two- and three-shift operation six days every week with equally essential production maintenance duty over week-ends.

These 100-foot span Northern Cranes were installed to serve all needs ranging from annealing furnaces, draw benches, tube straighteners and coilers to shipping. Loads ranging up to 157 feet long are handled by the two cranes operating together. This is convincing proof that Northern overhead cranes can be fully integrated as an essential part of processing operations.

Our booklet SE-108-F gives details of their many outstanding features. Let us send it to your planning and layout executives.

Invest in Northern Cranes for highest quality service in overhead handling.

MATERIALS HANDLING EQUIPMENT

NORTHERN ENGINEERING WORKS

210 Chene Street • Detroit 7, Michigan

SE-2031

Don't buy a "bearing in a poke" . . . buy from your authorized source, Bearings, Inc.!

Know what you're buying — *Know* that the manufacturer and Bearings, Inc., as an authorized distributor, stand back of every bearing we sell you! *Know* you're getting the latest most improved design with a maximum, useable life.

Know the bearings you buy are in the manufacturers' original boxes, carefully protected from dirt and corrosion. *Know* that your bearings are as specified for precision and fit.

Don't buy a "bearing in a poke" from unauthorized sources — Contact your nearest Bearings, Inc. branch and get the best bearings for your needs. You will save time, trouble and money in the long run!

Providing bearing service in the North → **BEARINGS, INC.**

OHIO: Akron • Canton • Cincinnati • Cleveland • Columbus • Dayton • Elyria • Hamilton • Lima • Lockland • Mansfield • Toledo • Youngstown • Zanesville
INDIANA: Ft. Wayne • Indianapolis • Muncie • Terre Haute • **PENNSYLVANIA:** Erie • Johnstown • Philadelphia • Pittsburgh • York
WEST VIRGINIA: Charleston • Huntington • Parkersburg • Wheeling • **NEW JERSEY:** Camden
NEW YORK: Bolanrol Corp., Buffalo • Niagara Falls • **MARYLAND:** Baltimore • **DELAWARE:** Wilmington

and in the South → **DIXIE BEARINGS, INC.**

FLORIDA: Jacksonville • **GEORGIA:** Atlanta • **KENTUCKY:** Louisville • **LOUISIANA:** Baton Rouge • New Orleans
N. CAROLINA: Charlotte • Greensboro • **S. CAROLINA:** Greenville • **TENNESSEE:** Chattanooga • Kingsport • Knoxville • Nashville
VIRGINIA: Richmond

Edwin R. Richards

A Qualified Man for a Big Job

When Acme Steel Co. decided it would produce its own basic steel, Edwin R. Richards was named to head the operation.

Teaming with Chairman Frederick M. Gillies, he developed a new facility.

▪ Edwin Richards has been a steelmaker all of his working life. Since his graduation from Massachusetts Institute of Technology in 1923, his work has taken him from Chicago to Pennsylvania, Mexico, Utah and back to the Windy City.

Today he is director of the Iron and Steel Producing Div., of Acme Steel Co. He joined the firm in 1956 after spending a year as a consulting metallurgical engineer.

Pioneer in Oxygen—Shortly after joining Acme, he undertook one of the big challenges of his career. Teaming with Chairman Frederick M. Gillies, he developed a new steelmaking facility at Riverdale, Ill., using hot blast cupolas and oxygen top blown converters in combination.

He had a wealth of experience to qualify for the job. Years before, as division superintendent—open-hearth and foundry, he helped start operations of the Columbia-Geneva Div. of U. S. Steel Corp. There he played a key role in starting steel production under wartime conditions. One of his difficult assignments: Developing a steelmaking corps from a labor pool made up largely of farmers.

He's Qualified—Mr. Gillies says Mr. Richards is just the man Acme was looking for when the company decided to produce its own basic steel. "He is imaginative, inquiring, dedicated, tireless, able, and experienced," Mr. Gillies adds.

EDWIN R. RICHARDS: Congratulations from his teammate.

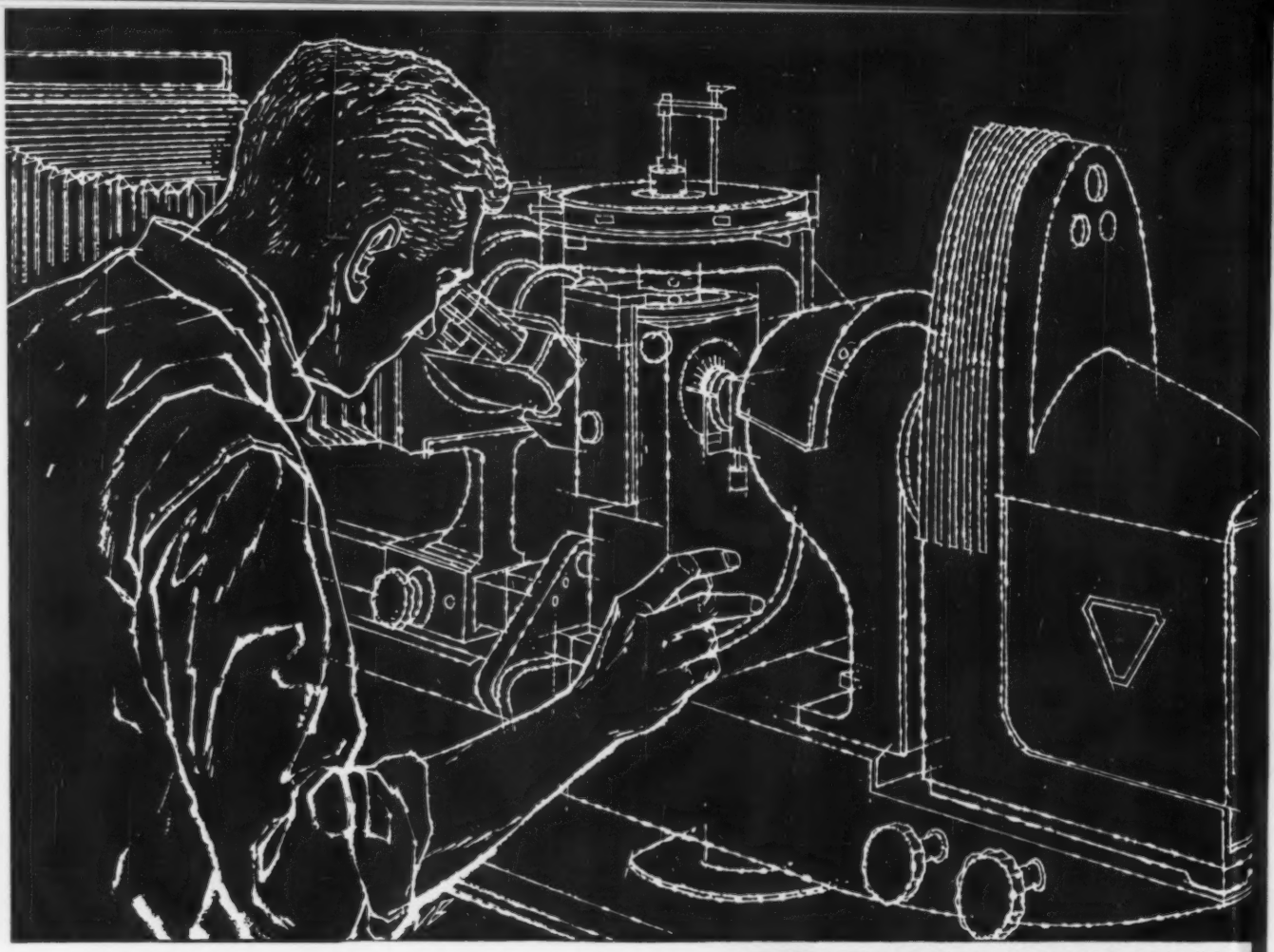
Mr. Richards was close to every phase of the development of the Riverdale operation. He took part in the early planning, evaluation of the various steelmaking processes, the construction work, and production of the steel. He worked with the engineers, builders and suppliers of equipment.

Start to Finish—He assembled the needed supervisory group both from within and outside the company. Then he saw them through a training program in the operating phases of the new process.

Associates say they "literally had to chase him through the gates to get the proper rest." He spent weeks working, sleeping and eating in the plant.

The plant opened only one week before the current steel strike began. But Acme points to the record of the operation of the Riverdale plant as a tribute to Mr. Richards. His crew quickly produced 126 heats, all of them meeting quality standards for company products.

With his wife, Mr. Richards lives in Park Forrest, Ill. The Richards' have a son and daughter, both away at college. For relaxation Mr. Richards turns to the outdoors. He is an avid camper, hunter and fisherman, and horseman.



PRECISE CONTROL OF MICROSTRUCTURE

to your restricted specifications with

J&L Cold Rolled Strip Steels

The microstructure of strip steels can have an important bearing on the fabrication and mechanical properties of many critical components. All of the phases which combine to form the structure of a metal have their own specific properties.

J&L offers you an experienced organization devoted to strip steel processing combined with fully integrated facilities which permit precise control of microstructures.

Basic oxygen furnaces, high standard open hearth practice and electric furnaces provide optimum melting conditions; new hot strip mills are designed specifically to produce the finishing temperatures needed for inherent quality. Cold mills, annealing and normalizing furnaces and other equipment are designed and constructed solely for precision strip steel processing.

These integrated production facilities make it possible to assure the development of the microstructure required for critical applications.

For your convenience, precision strip facilities are available to you in our plants at Youngstown, Indianapolis, Los Angeles and Kenilworth (N. J.)

The small unit rotary annealing method assures precision temperature control and develops optimum hardness and microstructure for strip steels.

J&L STRIP

LOW CARBON • HIGH CARBON • ALLOY • STAINLESS
TEMPERED SPRING STEEL • ZINC AND COPPER COATED

Jones & Laughlin Steel Corporation • STAINLESS and STRIP DIVISION • Youngstown 1, Ohi

How to Rate Economic Growth

Arguments that inflation is justified if growth results are coming under more attack.

Growth itself may not always represent the best type of progress.

▪ The battle between sound dollar advocates and inflation-for-growth supporters is getting hotter.

Until now, those favoring creeping inflation for the sake of progress found a ready audience. The idea that production would strangle without liberal credit supplies often got at least nodding acceptance.

Forced Growth—But more and more there's a suspicion that this thinking is not backed by fact. Forced economic growth by hothouse methods may be both dangerous and undesirable.

Treasury Secretary Robert B. Anderson, who now apparently dominates the Administration's financial policies, is a sharp critic of the creeping inflationists. He points out growth at an artificial rate can only cause loss of some economic freedom, create inflation, or both.

"Economic growth is usually measured in terms of the annual increase in real gross national product," he says. "For some purposes, this is a good measure of economic growth, for others it is not."

"First, it tells us nothing about the nature of the growth that takes place . . . secondly (this) broad measure provides only a partial clue as to whether the growth . . . is sustainable."

Questions to Answer—According to Mr. Anderson, measures of growth must be closely studied. Much depends on how these questions can be answered:

How much does consumption expand in relation to government use of goods and services? How much output consists of military hardware as opposed to schools, highways, and other public facilities? How much of the increase is composed of goods that people do not want—goods which end up in government warehouses, are given away, destroyed, or sold for less than true value? What share of output goes for plant improvement or expansion? How much effort goes only for plant maintenance, rather than modernization or additions?

True Yardstick — Even beyond these questions, more loom up. Was the growth in output distributed among various groups in the economy? Did it result in distortions and imbalances that would hamper future growth? Did temporary growth come through action that restricted freedom?

These tests of growth are offered by Mr. Anderson: It must be the right kind of growth. It must be sustainable. It must have a reasonable distribution.

Is Business Spying Ethical?

▪ How much information should a company collect about its competitors? How should this information be used for best results? And how wide is actual business spying?

These questions are tackled in a new survey, "Competitive Intelligence: Information, Espionage, and Decision-Making," prepared by students at the Harvard Graduate School of Business Administration.

Where to Go—Most information about competitors, according to the 300 business executives questioned, is collected by personal contact. Sources on competitive prices, products, research and development are competing salesmen, customers, suppliers, and company executives. Other sources include trade associations, stockholder meetings, government reports, private business services, and the press.

When to Stop—Beyond these are the controversial methods of collecting information. Most companies surveyed believe information gathering should end when it conflicts with legal or moral laws. Some said it is sometimes necessary to gather facts through unethical, but legal, channels. An even smaller number would use illegal methods if the competitive situation was critical.

Actual business espionage is fairly widespread. Spying or other methods of collecting information are present in their industry, according to 27 pct of those questioned. Among this group, 20 pct thought such activity was increasing, 75 pct saw no change, and 10 pct thought it was decreasing.

Sealing the Gaps—To cut down business spying a company must realize the opportunities for espionage, the methods used, and devices which will detect and identify undercover methods.

Competitive intelligence can be important in making business decisions, the survey states. But a sound plan of action is needed to make the most of it.

35% Faster with a CUT MASTER Model 75

BULLARD

With their new 76" Bullard Cut Master, Model 75, the Bird Machine Company, South Walpole, Mass., is machining a 39-5/8" diameter stainless steel cylinder frame assembly 35% faster than previously, according to Mr. James Lindsay, General Superintendent.

For the rough cut, removing from 1/8" to 3/16" of stock, the ram and side heads are cutting simultaneously. On the finish cut, .005" deep, only the side head is used.

Accuracy to hold size reduces spoilage. Pendant control reduces operator fatigue. These factors contribute to make these savings possible.

An analysis of your turning, boring, facing and threading operations may show a savings over your present method. Your Bullard Sales Engineer can tell you. Why not ask him?

Or, write

THE BULLARD COMPANY
BRIDGEPORT 9, CONNECTICUT

Chrysler Makes a Fresh Start

Spends $350 Million to Regain Old Markets

The company breaks from the past in 1960 with a new engine, new construction method, two new cars—and a new selling setup.

It hopes the changes will earn it a 20 pct share of new car sales.—By A. E. Fleming.

▪ The coming year will see the up-and-down auto industry shift into second gear and continue the climb from 1958's rocky valley, predicts Chrysler Corp. president L. L. Colbert. He says between 6.5 and 7 million new cars will be sold, including 500,000 foreign models.

In hopes of improving its current market standing, Chrysler has invested some $350 million in developing and bringing out its 1960 models. Included are two new cars, Valiant and Dart; a new six-cylinder engine in two sizes; and unitized construction (see pictures) for all Chrysler cars except Imperial.

Everything Changed—The shift to unit construction is both an extensive and expensive undertaking. Assembly lines must be completely rebuilt. Completely new conveyor systems are required in each plant. And assembly techniques require nearly all major units to be welded, rather than bolted, together. This calls for installation of numerous welding machines to perform the thousands of welds found in each car.

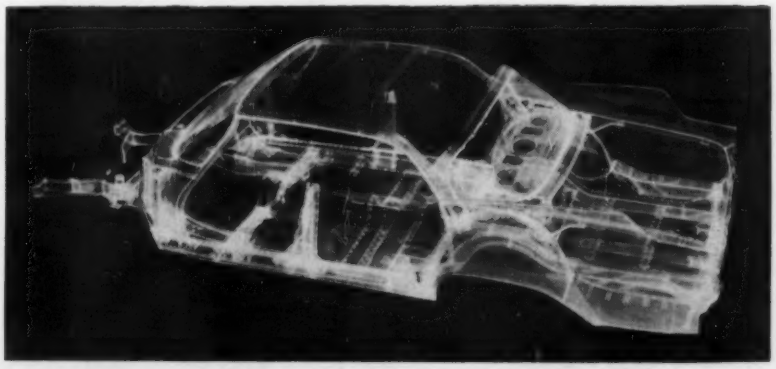
New makes, new models, new engines and new bodies are meant to provide better products for Chrysler's customers. But the company is making similar—and possibly just as important—changes in its dealer and marketing setup. The goal is a stronger dealer body with more zip and efficiency—just like the new cars.

Going Into the 1960's—During Chrysler's "Frantic Fifties" it has not been unusual to find Plymouth salesmen competing in the same neighborhood. Dodge dealers held Plymouth franchises. So did De Soto and Chrysler-Imperial dealers.

Fewer, But Stronger—A year ago some 6800, or 85 pct of Chrysler's 8000 dealers, sold Plymouth. By the middle of this month about 4500, or 55 pct will be selling the car. Ultimate goal is to chop this figure to 4000.

"We're moving into the next decade with three separate distributor groups," says Mr. Colbert, Chrysler Corp. president. "We've a group for Plymouth-De Soto-Valiant, another for Dodge-Dart-Dodge Truck and a third for Chrysler-Imperial. Where consideration of dealer location and market potential make it advisable, Chrysler-Imperial deal-

Chrysler Switches to Unit Body for 1960



SEE-THROUGH BODY: Chrysler Corp. president L. L. Colbert is shown with a ⅜-scale plastic model of one of his company's all-new car bodies for 1960. A full view of the body is shown in the lower photo.

New Car Introduction Dates

The first two weeks in October will see people scurrying from showroom to showroom to take a close look at the 1960 model automobiles. It will be one of the most compact—and earliest—introductory seasons in history. All except one of the new cars will bow in the Oct. 1-16 period. Plymouth's Valiant will be unveiled the last week in October. Here are the public introduction dates:

Oct. 1	**Pontiac**	**Oct. 7**	**Dodge**	**Oct. 15**	**Lincoln**
	Oldsmobile	**Oct. 8**	**Buick**		**Mercury**
Oct. 2	**Cadillac**		**Falcon**		**Studebaker**
	Chevrolet		**Ford**	**Oct. 16**	**Chrysler**
	Corvair		**Thunderbird**		**De Soto**
	Imperial	**Oct. 14**	**Rambler**		**Plymouth**
Oct. 7	**Dart**	**Oct. 15**	**Edsel**	**Oct. 26-30 (Tentative)**	**Valiant**

ers will also handle the Plymouth, Valiant or both."

Wide Range—The new three-division lineup gives dealers in each group a range of products and prices that appeal to more than 70 pct of the new car buyers.

Main responsibility for marketing the Valiant will lie with the Plymouth-De Soto-Valiant Div. "This doesn't mean every dealer who sells Plymouth and DeSoto has been or will be offered the Valiant franchise automatically," stresses Mr. Colbert.

Selecting Dealers — "Eventually we expect the Valiant will be sold by an equal number of Plymouth-De Soto and Chrysler-Plymouth dealers. We are exercising great care in locating Valiant dealers to cover all markets while at the same time avoiding over-dealering in any one area."

An Old Problem—In reflecting on the 1950s, Mr. Colbert admits his company's dual dealership setup was unsound. But the story goes as far back as the 1930s. At that time, Chrysler quickly needed as many retail outlets as possible for the new Plymouth car. Plymouth franchises blossomed everywhere, in Dodge, De Soto and Chrysler showrooms.

There was no trouble for a time. But in the stiffly-competitive post-war era cracks in the dealer network began to develop. It is one of the reasons why Chrysler's market share has fallen from 20 pct of the market in the early 1950s to below 11 pct this year. And why Plymouth's penetration has fallen from 10 pct to below 7 pct.

Bread-and-Butter—The first real step to untangle the knotty dealer problem was made in 1956. A central marketing group was established. The idea was to get more sales in the low-price part of the car market. This meant weeding out some Plymouth outlets from bunched up areas.

But Dodge dealers did not fall in love with the idea of letting loose the bread-and-butter Plymouth line. They squawked. Chrysler's answer was the Dart, a smaller, lower-price version of the Dodge.

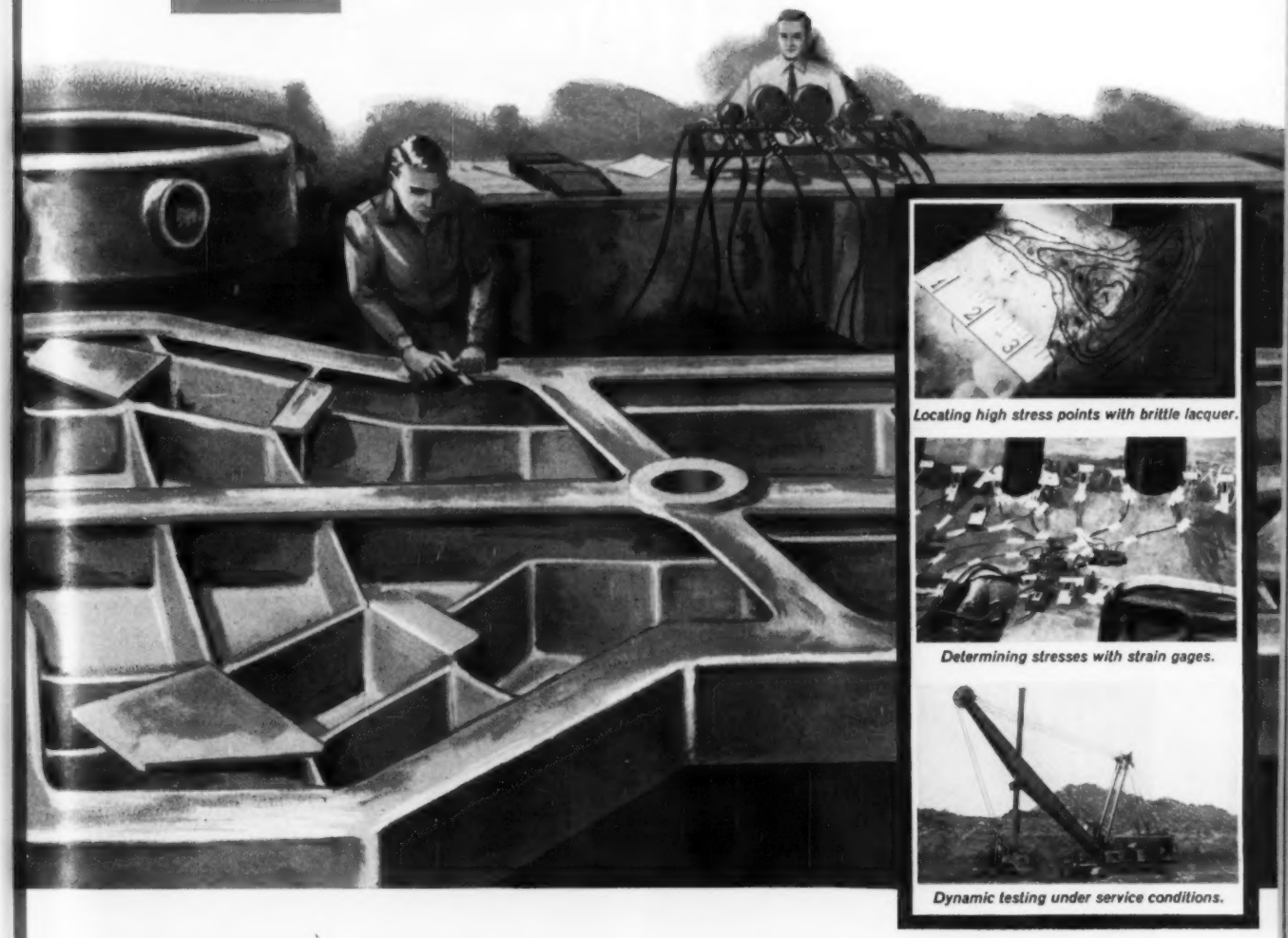
At about the same time as the Dart idea was being studied, it became clear that a giant economy car market was taking shape. It was decided to go ahead with the Valiant.

Comeback Trail — Chrysler is banking heavily on the simultaneous introduction of the low price Valiant and Dart, and the regrouping of dealers to regain lost markets.

The Bull of the Woods

DO YOU REALIZE WHAT IT WOULD HAVE COST TH' COMPANY IF WE HADN'T CAUGHT YOUR MISTAKE IN THAT BLUE PRINT?
LOOK AT IT! AND ONE OF TH' DUMBEST MEN IN TH' SHOP CAUGHT TH' MISTAKE RIGHT AWAY! WHO MADE THAT DRAWING, YOUR OFFICE JANITOR?
LOOK AT 'EM RUBBIN' IT IN! YOU'D THINK GUYS AS HIGH UP AS THEY ARE WOULD TRY TO WORK IN HARMONY!
CONTRARY TO ALL OPINION, IT AIN'T HARMONY THAT MAKES SUCCESSFUL COMPANIES -- IT'S WORKIN' AGIN EACH OTHER... I KNOW OF A BIG COMPANY THAT HIRES BOSSES THAT HATE EACH OTHER AND WORK THEIR HEADS OFF TRYIN' TO SHOW EACH OTHER UP!
T.M. Reg. U.S. Pat. Off.
THE FATHEAD DEPARTMENT
© 1959 by NEA Service, Inc.

...where industrial progress is cast in steel



Locating high stress points with brittle lacquer.

Determining stresses with strain gages.

Dynamic testing under service conditions.

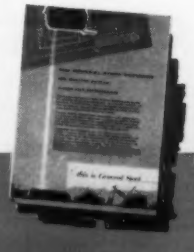
ENGINEERED TESTING...For design verification and improvement

General Steel's activities extend far beyond the manufacturing process . . . into the area of checking existing designs for product improvement, and verifying new designs.

For example, the General Steel test laboratory employs the latest stress analysis techniques and the most modern equipment to conduct brittle lacquer and strain gage analyses under controlled atmospheric conditions. Multi-directional static load tests, dynamic tests under actual service conditions, and many other types of tests are conducted to develop better cast steel structures and steel castings for use in the cast-weld and composite structures of your product.

This assurance of quality from planning to performance is available to you. Let us demonstrate how you can use it . . . profitably.

Write for folder **How General Steel Castings Can Improve Product Design and Performance.** General Steel Castings, Station 201 Granite City, Illinois



GENERAL STEEL CASTINGS

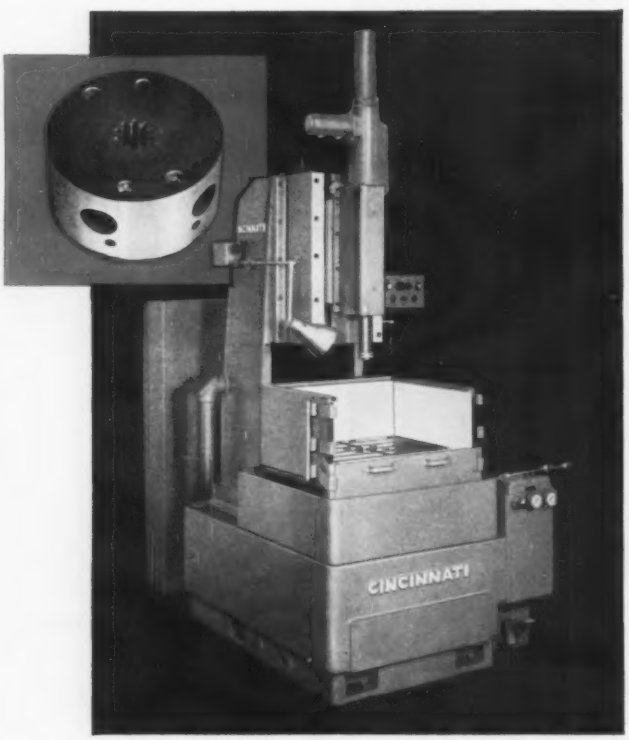
GRANITE CITY, ILL. • EDDYSTONE, PA. • AVONMORE, PA.

CINCINNATI

Elektrojet®
ELECTRICAL DISCHARGE MACHINE

ELEKTROJET

35 GIVES YOU A CHOICE OF ELECTRICAL DISCHARGE MACHINES



NO. 1 ELEKTROJET *with non-rotating workhead. Typical work is the extrusion die above, about 2⅞" OD. Operation, EDM gear teeth through center.*

NO. 3 ELEKTROJET. *This machine has the capacity for large heavy work, like the 15" long dies illustrated here.*

Advantages offered by electrical discharge machining are greatly extended by Cincinnati's new line of Elektrojet Machines. There are 35 variations in the line, covering the requirements for unusual or "impossible" machining operations on a wide variety of parts ranging from small missile components to forging dies. Elektrojet Machines are designed from the machine tool builder's viewpoint, with a high degree of dependable performance in mind.

Four styles of workheads are available: non-rotating, rotating, ram-type and universal. For all of them, a servo feed unit maintains proper gap between electrode and work to assure maximum efficiency of metal removal. Other beneficial features: two styles of work tables, fixed or adjustable . . . four styles of dielectric tanks, solid, open front, disappearing or moving table . . . a selection of power supply units.

There are many other reasons why Elektrojet engineering and machines are the finest. Folder M-2077 contains the complete story. Write for a copy. **Milling Machine Division, The Cincinnati Milling Machine Co., Cincinnati 9, Ohio.**

KNEE TYPE AND BED TYPE MILLING MACHINES • DIE SINKING MACHINES
• CUTTER AND TOOL GRINDERS • ELECTRICAL DISCHARGE MACHINES

CINCINNATI
MILLING MACHINE DIVISION

Defense Costs to Keep Climbing

Reduced Manpower Will Soften Impact

Trimming military payrolls may keep costs down. But the minimum defense budget will still be about $40 billion.

The cost of space-age war implements is going up, but because of them the military can be cut.—By G. H. Baker.

▪ The high cost of national defense can be held down somewhat by trimming military payrolls, according to the Pentagon's top money man.

But Wilfred J. McNeil, outgoing (to become president of Grace Lines) Assistant Secretary of Defense for fiscal affairs, warns that the nation may as well get used to the idea of spending a minimum of $40 billion a year for national defense.

Climbing Costs — The cost of space-age war implements is not going to decline, Mr. McNeil says. Instead, the price tag on every piece of defense hardware the government buys will tend to creep upward. These price advances are due to a combination of several factors:

1. Improvements in missile technology.

2. Higher costs of metals and other component materials.

3. Creeping inflation, which causes defense contractors and subcontractors to reappraise their costs.

Fewer Men Needed—Savings in manpower can safely be undertaken, however, Mr. McNeil predicts. The obvious reason being space-age warfare does not contemplate huge manpower masses in battle. What the Army, Navy and Air Force need today are competent technicians. There are today about 2.5 million men in uniform. Mr. McNeil predicts this total can—and will—be safely cut to about 1.5 million by gradual degrees.

It is important to note that Mr. McNeil's outlook does not mean that military spending is to be limited to about $40 billion for each of the next several years. What he is saying is that we cannot safely spend less than that sum, and that any sudden flare-up of aggression against the U. S. can and will knock the lid off the $40 billion concept.

New Federal Fuel Tax Starts Today

The cent-a-gallon Federal tax boost on gasoline and other vehicle fuels, effective today, Oct. 1, will only partially aid in keeping the Federal highway building program at its originally planned pace.

The tax will make up only a part of the huge financing deficits the massive road building program faces due to rising costs of materials, labor and land. The new four cent increase will be effective for 21 months. After that it will revert to three cents again.

After July 1, 1961, the law provides that the highway trust fund will get half of the 10 pct excise tax on autos and five-eighths of the 8 pct tax on auto parts. This part of the plan, however, may be changed before it is due to go into effect.

Challenge to the Red Leader

Boosting Power—Premier Nikita Khrushchev should permit expansion of private foreign investment in Russia and the satellite nations if he seriously wants to boost East-West trade.

This is what H. Struve Hensel, chairman of the Council for Private International Development, and his organization insist is the best method for bolstering trade relations.

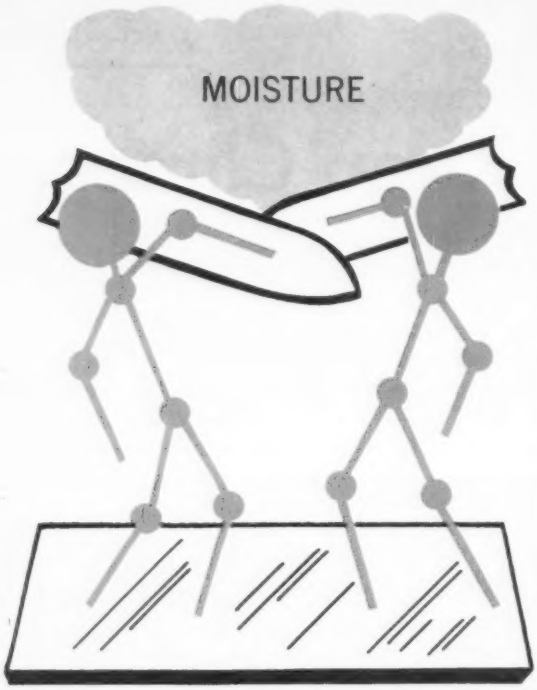
Mr. Hensel notes the flow of private investment between nations "is one of the significant factors in international trade."

The Challenge—"If Mr. Khrushchev believes in this kind of enterprise, I challenge him to lower the barriers so that private investments might be made within the Soviet sphere of the world without fear of expropriation, confiscation or nationalization," says Mr. Hensel.

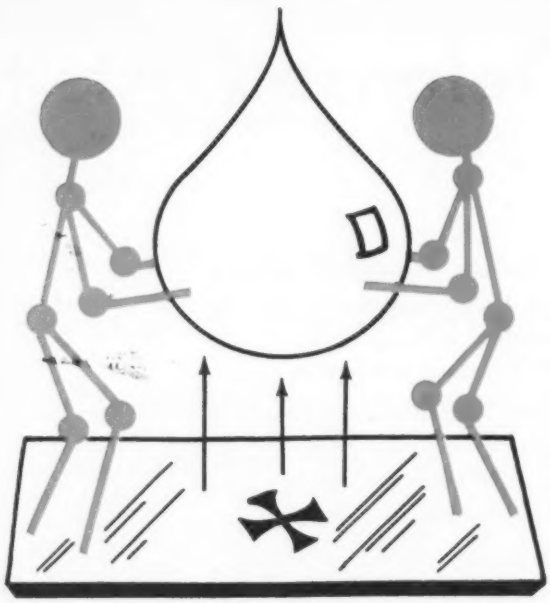
The challenge was issued in response to a plea made by the Soviet leader before the Economic Club of New York. He appealed for more world trade "on the basis of equality and mutual advantage, without any discrimination."

Open the Gates — Says Mr. Hensel, the only way to get co-operation in world trade is to "open the gates to the private investor, and to give him assurance his property rights will be respected."

"I wonder whether or not Mr. Khrushchev is willing to embark on such a program," Mr. Hensel adds.



protects dry metal...



even raises water off wet metal

POLARIZED RUST VETO 377

Whether they are dry or dripping wet, precision finished metal parts can now be protected against rust with a thin, tough, almost invisible .0003" film of long-lasting, multi-purpose Rust Veto 377.

Rust Veto 377 literally displaces moisture and clings to the metal for complete protection, even in damp, humid indoor conditions. It resists oxidation for as long as a year without deterioration of the protective film and can be used effectively without staining, on all types of metal parts either in process or packaged for sale.

For full details about Rust Veto 377 send for NEW ILLUSTRATED BULLETIN; for help on any industrial rust prevention problem, call or write: E. F. Houghton & Co., 303 W. Lehigh Ave., Philadelphia 33, Pa.

When preserving for military use specify
COSMOLINE 377
(Conforms to MIL-C-14201A, Grade 2)

COSMOLINE / RUST VETO
Most famous names in rust prevention

products of . . .

E. F. HOUGHTON & CO.

Ready to give you on-the-job service

Philadelphia, Pa. • Chicago, Ill. • Carrollton, Ga.

Detroit, Mich. • San Francisco, Calif. • Toronto, Canada

West Expects Busy 4th Quarter

Metalworking Surge Predicted If Strike Ends

Carloadings in the Farwest may reach a four-year high this quarter.

Largely responsible: Activity by metalworking, auto assembly plants and farm implement makers.—By R. R. Kay.

■ A solid fourth quarter for West Coast business. That's the forecast from the Pacific Coast Shippers Advisory Board.

The Board foresees a sharp upsurge for the metalworking industry. Of course, this assumes an early settlement of the steel strike.

Carloadings should rise six pct to 461,000 cars—the highest last-quarter volume since 1956. Last year's fourth quarter saw 430,000 cars loaded.

Busy Shippers—Here's a rundown of estimated car needs for fourth quarter 1959 compared with actual carloadings for the same period in 1958:

Iron and steel, up 34 pct; coal and coke, up 51 pct; ore and concentrates, up 21 pct; machinery and boilers, up 21 pct.

Automakers, too, can be optimistic. The forecast says they'll need 30 pct more freight cars to move their 1960 models.

Farm implement makers can look for an 18 pct hike. Only the aircraft industry will ship less—about seven pct.

Gas Industry Outlook — On a nationwide level here's more bullish news for metalworkers. The gas industry in this country plans to spend $35 billion during the next twelve years.

That's the forecast made by J. Theodore Wolfe, president, American Gas Association, at the annual Pacific Coast Gas Assn. meeting in Los Angeles.

A good share of the money will go to the metalworking industry, according to the AGA head.

Product Preview — Mr. Wolfe foresees dramatic developments in appliances and in uses of gas. Here are just a few:

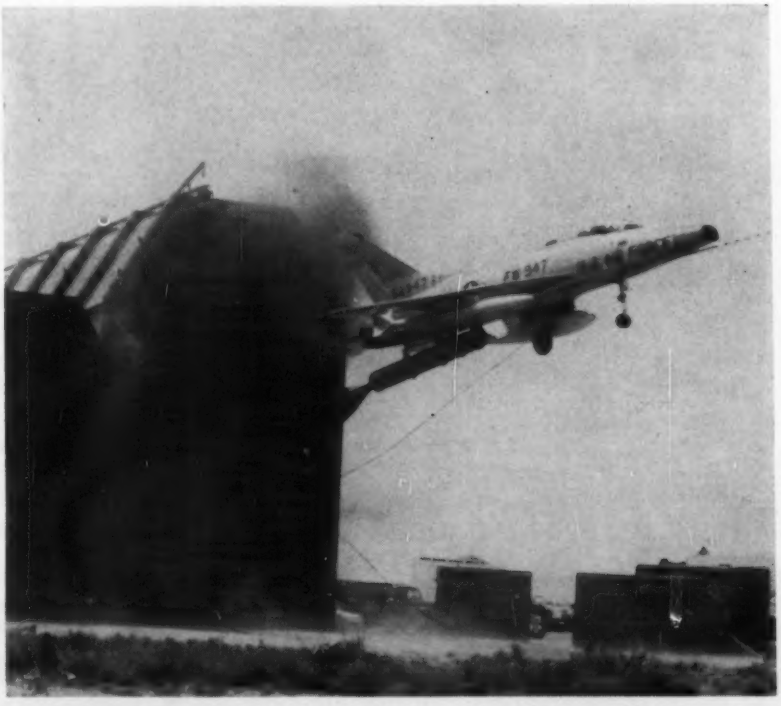
Concealed gas ovens will start with a wave of the hand. A gas range will have "flameless" fold-away top burners, powered with natural gas fuel cells.

You'll see smokeless, odorless incinerators. Water heaters will double their heating capacity, but their size will remain about the same.

Mr. Wolfe also promises new breakthroughs in gas refrigerators, air conditioning units, and furnaces.

And in the next ten years, the number of gas users in the nation will jump from 32 million to 44 million.

Sheltered Launch for a Jet Fighter



ZERO LENGTH TAKE-OFF: F-100 Super Sabre built by North American Aviation proves jet fighter can take off from a shelter made to withstand an atomic blast. Test is at Holloman Air Force Base in New Mexico.

Carl:
This sounds like what we've been looking for. Suggest you investigate
JC

COOPERATIVE CREATIVE-ENGINEERING

• COOPERATION IN IDEAS

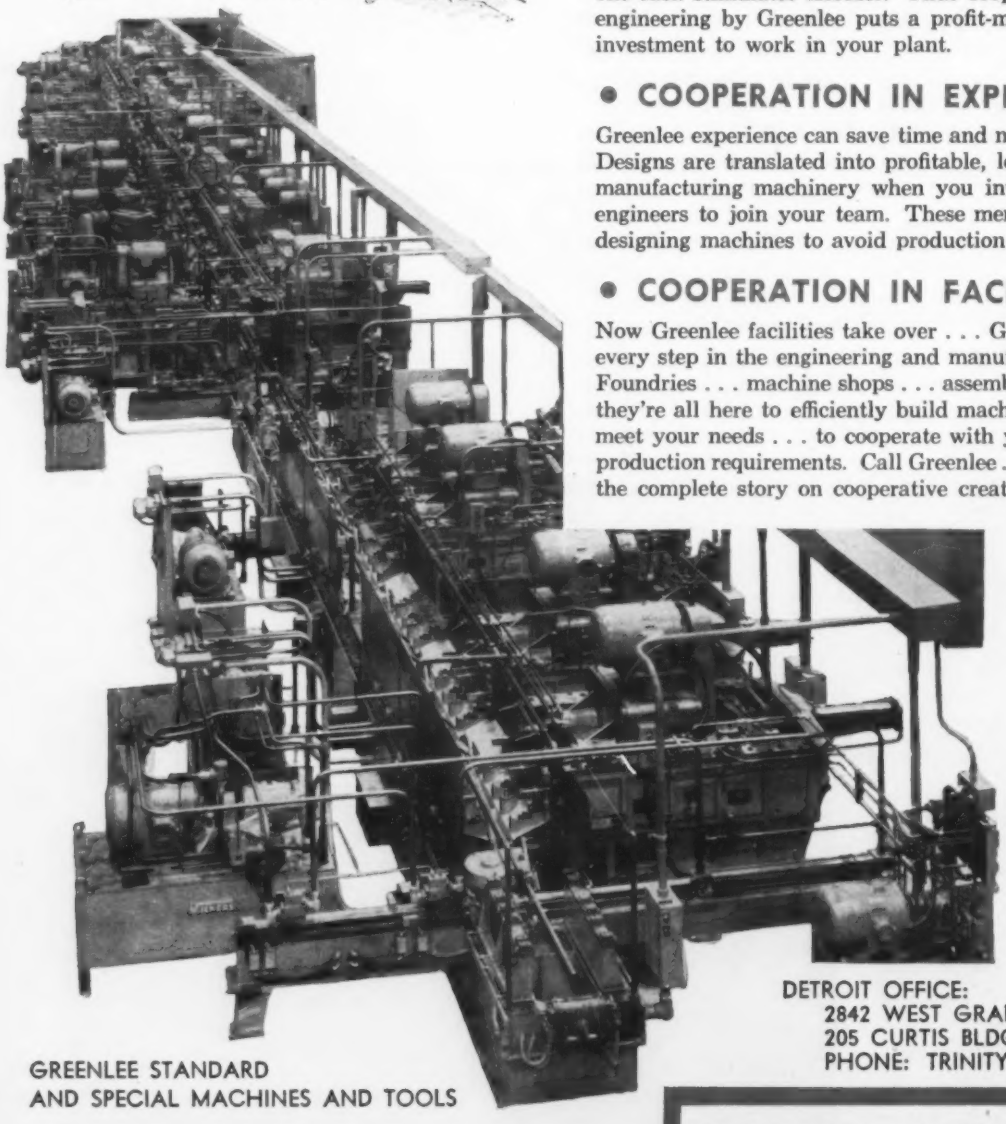
Greenlee engineers work with your men at all levels of management, production, and engineering. They gather and exchange information based on broad experience. These contacts accelerate creative thinking . . . one idea stimulates another. Thus cooperative creative-engineering by Greenlee puts a profit-making investment to work in your plant.

• COOPERATION IN EXPERIENCE

Greenlee experience can save time and money in your plant. Designs are translated into profitable, low-cost manufacturing machinery when you invite Greenlee engineers to join your team. These men know the art of designing machines to avoid production problems.

• COOPERATION IN FACILITIES

Now Greenlee facilities take over . . . Greenlee controls every step in the engineering and manufacture of machines. Foundries . . . machine shops . . . assembly floors . . . they're all here to efficiently build machines to meet your needs . . . to cooperate with you in meeting production requirements. Call Greenlee . . . let them give you the complete story on cooperative creative-engineering.



PRODUCTION MACHINERY
GREENLEE

Miss Jones:
write for available literature and mail this to Joe Thompson
C.F.

DETROIT OFFICE:
2842 WEST GRAND BLVD.
205 CURTIS BLDG.
PHONE: TRINITY 2-3938

GREENLEE STANDARD
AND SPECIAL MACHINES AND TOOLS

- Transfer-Type Processing Machines
- Multiple-Spindle Drilling and Tapping Machines
- Six and Four-Spindle Automatic Bar Machines
- Die Casting Machines and Trim Presses
- Hydro-Borer Precision Boring Units
- Core Box Handling Equipment for Foundries
- Specialized Woodworking Machines
- Hand Tools for Woodworking
- Tools for Woodworking Machines
- Hydraulic Tools for Electricians, Plumbers, Contractors

Machines designed with the future in mind

GREENLEE
BROS. & CO.
1747 MASON AVE.
ROCKFORD, ILLINOIS

Joe: These people have a lot of machines in the Detroit area — look them over and let me know your reaction. C.F.

Building-Block Proves Flexibility

Ford Retools V8 Engine Lines for Sixes

By retooling two automatic machining lines, Ford made big savings.

Building-block made it possible for a company other than the original builder to do the work on one of the lines.—By R. H. Eshelman.

▪ Why did the building block concept suddenly skyrocket across machine tool horizons in 1958 and 1959? Some answers were given at the SAE production forum held recently in Milwaukee. Speaking there, Henry C. Daum, Ford Motor Company's machining expert, discussed planning production of the Falcon.

"Considerable savings have been realized in retooling two automatic machining lines," he declared. These lines, installed to produce 1958 Ford V8 engine blocks and heads, proved to be excess capacity.

Eight Becomes Six—Spectacular aspect of this switch is that the new Falcon engine is an in-line six. How was the feat achieved?

Cooperative pre-planning of machine and equipment requirements, between builder and user, according to Mr. Daum. These automated machining lines were built with standardized units of the particular builder, he noted. The builder, The Cross Co., specialized in such standard components even before the building block concept became popular.

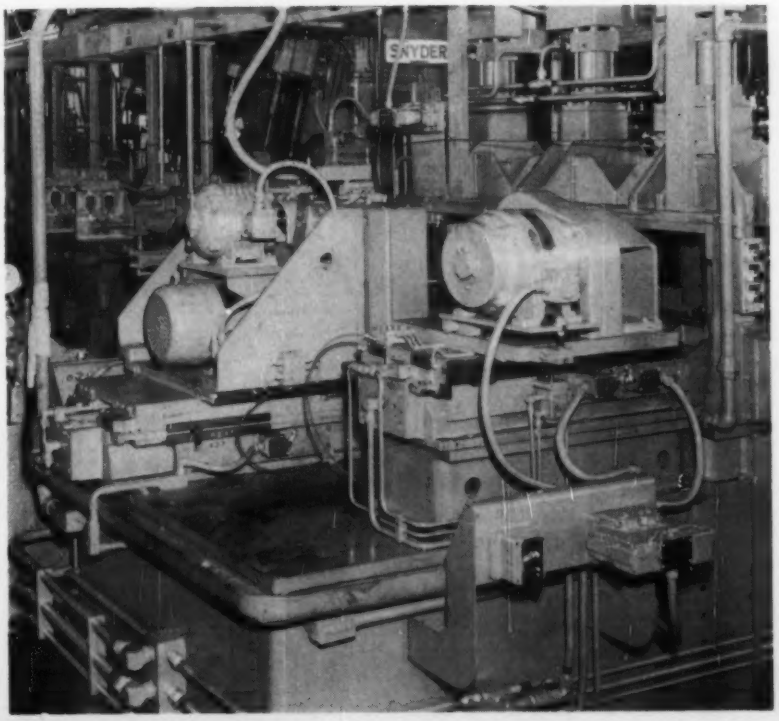
Divided By Two—Even more remarkable, another builder completed the switch. Cross is now in process of revamping a second line, it's learned.

Minus Disadvantages—Mr. Daum revealed that specifications for building-block components and units, required in construction of automated machining lines and other production machine tools, have been published as a company standard. Other auto manufacturers are following suit.

Looking ahead, Mr. Daum told the auto engineers, users and machine builders must plan now to overcome other known disadvantages to automation. Some he ticked off are: Complex maintenance problems, costly break-downs, big tool inventories, high engineering and special machinery costs, excessive installation costs.

Other Hot Topics—In a different area, meanwhile, another interesting case of special machine rebuilding has cropped up. This is a transfer machine for a differential carrier for Chrysler Corp.'s Valiant. This automation unit and another Snyder Corp. line for machining transmission cases were very successfully rebuilt, Chrysler says. They're now in production at Chrysler's New Process Gear Div. in Auburn, N. Y.

Chrysler Rebuilds Transfer Line



NEW FROM OLD: This 23-station Snyder transfer machine was rebuilt to machine Valiant transmission cases at New Process Gear Div.

INDUSTRIAL BRIEFS

Autos and Steel — In spite of many new metals working their way into auto design, amount of steel used in the 1960 models will be about the same as the previous year. The American Iron and Steel Institute reports that autos next year will be about 91 pct steel. Aluminum use will total about 1.4 pct for '60s, about the same as last year.

Just Out—The 1959-60 Buying Directory, covering the location and facilities of its member companies, has been published by the National Screw Machine Products Assn. It is available from the association, NSMPA Bldg., 2860 E. 130 St., Cleveland 20, O.

Improvements — Plant improvement projects for the Marion Forge Div., Eaton Manufacturing Co. in Marion, O., will cost about $1 million. The program calls for installation of a forging press, billet heating furnace and materials handling equipment.

Refining Plant—American Metal Climax, Inc. will build a germanium refining plant at Carteret, N. J. It will produce germanium dioxide from primary raw materials and scrap. The unit will be situated at the Carteret plant of United States Metals Refining Co., wholly-owned subsidiary of American Metal.

New Center — National Steel Corp. will soon build a new Research and Development Center at Weirton, W. Va. When completed late in 1960, it will contain about 50,000 sq ft of space. Principal activities will include: Basic research, materials research, process metallurgy, physical research and product research.

Turner Named—Mason Turner, an official of American Can Co., has been named asst. director, Containers and Packaging Div., Business and Defense Services Administration, U. S. Dept. of Commerce.

West Coast Purchase — Jessop Steel Co., Inc., Washington, Pa., has purchased Chase Steel & Supply Co., Los Angeles. The deal involved nearly $1.7 million. Jessop will provide $1 million to Chase for expansion of inventories to keep pace with demand for stainless for missiles and rockets.

New Acquisition—Koehring Co., Milwaukee, has acquired Flaherty Mfg. Inc., Pocatello, Idaho, by an exchange of stock. Flaherty will operate as a branch of Koehring's Buffalo-Springfield Div. This brings Koehring Co. into the bituminous paving and maintenance phases of the construction field.

Jetstar Contract—The Westinghouse Electric Corp. has received a $250,000 order for static inverters using silicon transistors from Lockheed Aircraft Corp.'s Georgia Div. These units, each rated at 3 kva, are to be installed in Lockheed's corporate aircraft, the Jetstar.

Cummins Elected—The Society of Mining Engineers of AIME has elected Dr. A. B. Cummins, manager, central research, Johns-Manville Corp., as its president. He will take office during the annual meeting of American Institute of Mining, Metallurgical, and Petroleum Engineers, Feb. 14-18, in New York.

"I not only have the know-how for the job, but also the know-who."

Foreign Banking—Quebec Cartier Mining Co., a subsidiary of U. S. Steel, has completed arrangements with a group of American and Canadian banks for credit. This will enable them to borrow up to $200 million in U. S. dollars between now and Dec. 30, 1960. The money will be used to assist in the development of the project to mine iron ore in the Lac Jeannine area in Quebec.

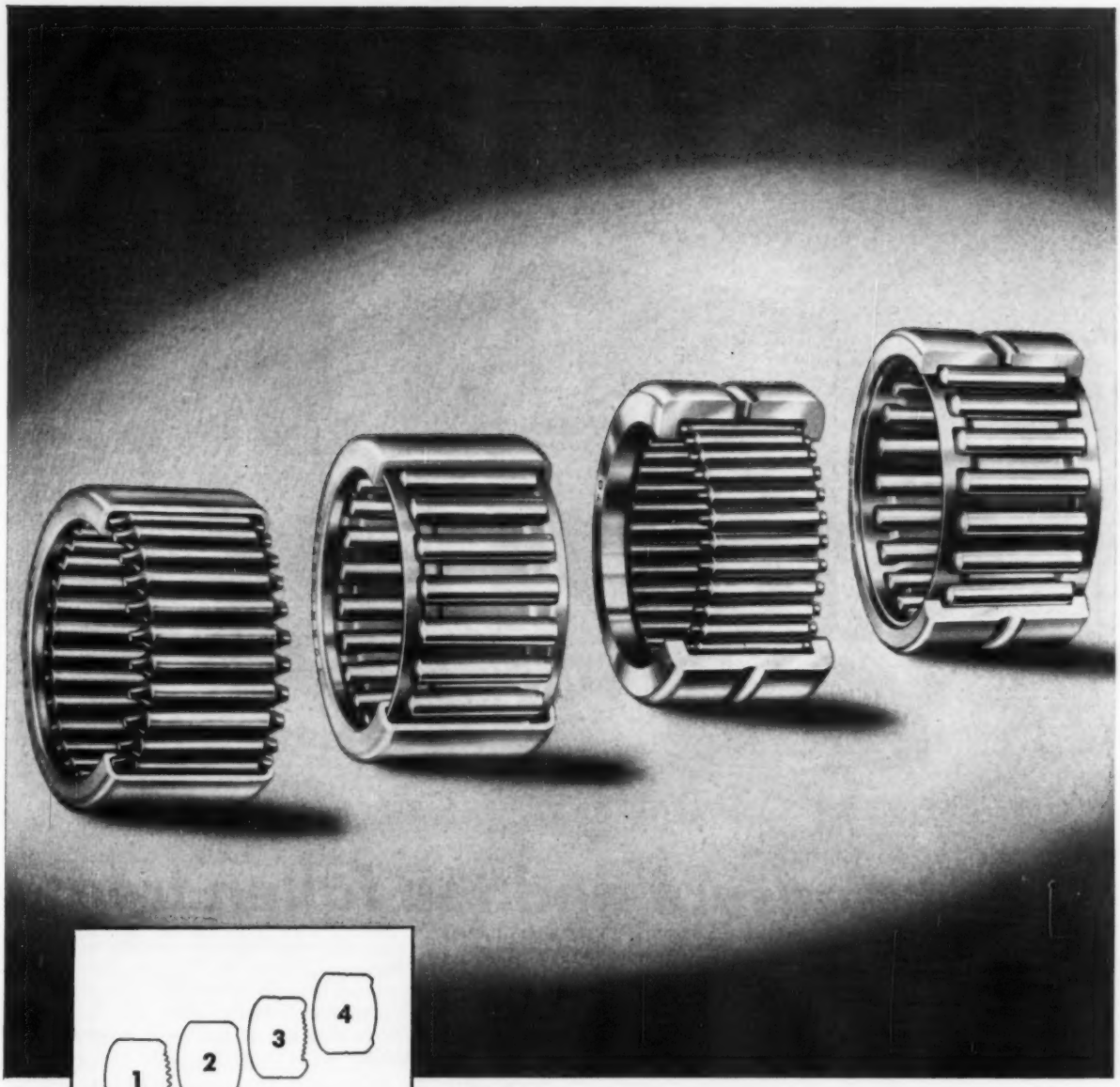
Mechanical Packings—The Garlock Packing Co. has completed negotiations to manufacture mechanical packings in Mexico City. Garlock de Mexico, the new subsidiary, is the joint venture of Garlock and their Mexican distributor. The Mexican enterprise will represent an investment of $750,000.

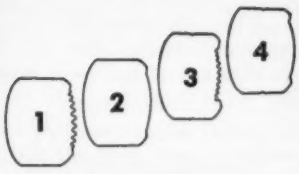
Centralizing Operations—Norden Div., United Aircraft Corp., will build a multi-million dollar engineering-research and manufacturing plant in Norwalk, Conn. Facility will be completed in about a year. It will bring under one roof Norden's operations now carried on at Stamford and Milford, Conn., and White Plains, N. Y.

Exploration Rights—An agreement enabling U. S. Steel Corp. to explore adaptation of a process patented by Griffin Wheel Co. has been signed. The process applies to Controlled Pressure Pouring to the manufacturer of semi-finished steel mill products. Griffin Wheel is a wholly-owned subsidiary of American Steel Foundries.

New Line — Solmica, Inc., St. Louis, is producing aluminum fascia in standard sizes for residential housing. Reynolds Metals Co. is supplying aluminum and working with Solmica in design and production planning of the new line.

Orders Up—New orders for industrial supplies and machinery in July were up 1.9 pct from June, reports the American Supply & Machinery Mfrs. Assn., Cleveland. Its new order index was up four points to 216 (July, 1948—100).





Torrington Drawn Cup Needle Bearing . . . for maximum radial capacity in minimum cross section . . . positioned by press fit—snap rings or shoulders unnecessary . . . runs directly on hardened shaft . . . most compact, light weight, economical.

Torrington Drawn Cup Roller Bearing . . . for higher speeds or long pregreased life . . . thin section race for simple press fit . . . runs directly on hardened shafts . . . unit construction for easy assembly . . . shaft-riding retainer.

Torrington Heavy Duty Needle Bearing . . . for use with thin section or split housing where extreme impact loads require heavy outer race . . . maximum shock resistance . . . full roller complement . . . unit construction.

Torrington Heavy Duty Roller Bearing . . . for combination of high speed, long pregreased life or shock resistance . . . roller stability provided by end-guiding . . . flange-riding retainer . . . unit design.

All of these types of bearings are available with inner races.

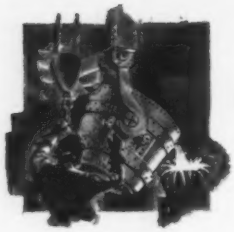
Only Torrington Makes All Four!

Torrington developed the Needle Bearing and its specialized variations. This breadth of experience assures impartial engineering recommendations based on specific application requirements. You can rely on Torrington to recommend the most compact and economical design compatible with operating conditions and performance requirements. Call on your Torrington representative for help in applying the right bearing in the right place. **The Torrington Company, Torrington, Conn.—and South Bend 21, Indiana.**

TORRINGTON BEARINGS

Every Basic Type of Anti-friction Bearing

NEEDLE • SPHERICAL ROLLER • TAPERED ROLLER • CYLINDRICAL ROLLER • NEEDLE ROLLERS • BALL • THRUST



AMERICAN ORIGINALS IN IRON AND STEEL

The treasure and the fallen tree

Only after great perseverance and hardship were the tremendous iron ore reserves of this country's Lake Superior region pinpointed. Men struggled hard and long through the tangled brush, the bogs and rocks of the rough country with inaccurate maps and, often, only scraps of information.

One day in the year 1845, P. M. Everett and a Chippewa Indian chief, Marji Gesick, were investigating earlier reports concerning large iron deposits near Negaunee, Michigan.

As Everett gazed about the wild and rugged country, his attention was attracted by a nearby fallen tree, the roots of which had torn a deep bowl-shaped depression in the forest floor. Scrambling to the spot, the white man and the Indian made an important discovery.

In the rain-washed crater they saw the tell-tale red-orange markings of iron ore. Further examination proved that here, in abundance, was ore of a truly remarkable richness. *And thus was first revealed the treasure of the, now famous, Marquette Range.*

Later as the Marquette, Menominee and other ranges were developed, new methods and materials were required to make the best possible use of these new-found resources.

Important among these materials, then as now, were Baker's Magdolite and Jebcolite . . . developed to produce more uniform ingots at lower refractory costs. Today Baker's Magdolite and Jebcolite are better in 5 ways: in composition, preparation, economy, quality and strength. Make sure you are using them!

ANOTHER AMERICAN ORIGINAL

JEBCO PRODUCTS SINCE 1889

BAKER'S MAGDOLITE

The original dead-burned dolomite

THE J. E. BAKER COMPANY

YORK, PENNSYLVANIA • PLANTS: BILLMEYER, YORK, PENNSYLVANIA • MILLERSVILLE, OHIO

Michael Zetz, appointed plant manager, Louisville, O., plant, Stainless and Strip Div., Jones & Laughlin Steel Corp.

Fulton Foundry & Machine Co. —**J. N. Davenport,** elected president, and **Edward Burkholder,** elected vice president, sales and sales manager.

Linde Co.—**Sidney Wade,** appointed vice president, distributor products.

The Dow Chemical Co.—**D. K. Ballman** and **C. B. Branch,** elected vice presidents; **R. B. Bennett,** elected treasurer and **F. H. Brown,** named controller.

General Electric Co.—**J. H. Goss,** appointed vice president and group executive, International Group; **F. J. Borch,** named vice president and group executive, Consumer Products Group; **C. K. Rieger,** named vice president, marketing services; **W. P. Von Behren,** appointed general manager, Major Appliance Div., Appliance Park, Louisville, Ky., headquarters; and **Herschner Cross,** named general manager, Radio and Television Div.

Industrial Brownhoist Corp.—**W. J. Hayes, Jr.,** elected executive vice president and general manager.

Union Twist Drill Co.—**G. M. Brydon,** elected a vice president.

Southeast Steel Rolling Mills—**Charles Rinderle, Jr.,** elected vice president.

Peterson Steels, Inc., Strip Steel Div.—**J. W. Herb,** appointed technical director, Melrose Park, Ill., headquarters.

International Business Machines Corp.—**R. W. Hubner,** appointed executive asst. to the president.

E. W. Bliss Co., Rolling Mill and Mackintosh-Hemphill Divisions—**H. A. Lampmann,** appointed manager, European sales engineering.

Rheem Mfg. Co.—**Dr. J. R. Spraul,** appointed acting manager, Research and Development Dept., New York.

E. W. Shuster, appointed coordinator, foreign business, E. W. Bliss Co.

Norma-Hoffmann Bearings Corp. —**W. D. Johnson,** appointed asst. sales manager.

Vickers Inc., Mobile Hydraulics Div. — **LeGrand Terry,** appointed eastern regional sales manager.

The Black & Decker Mfg. Co.— **J. T. Redmon,** appointed Cincinnati district manager.

Allis-Chalmers Mfg. Co.—**R. A. Hedden,** appointed works manager, manufacturing, Industries Group,

(Continued on P. 70)

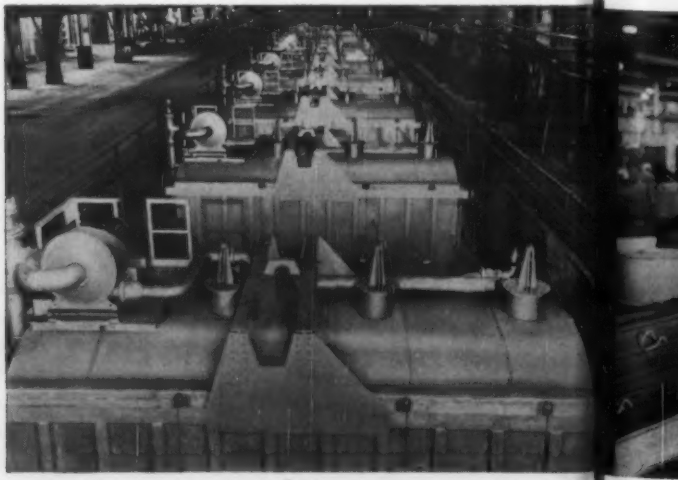
J. H. Werner, named sales manager, Lee Wilson Engineering Co., Inc., Cleveland.

E. C. Hanna, elected director, engineering, Landis Machine Co., Waynesboro, Pa.

L. M. Hess elected vice president and asst. general manager, Landis Machine Co., Waynesboro, Pa.

Electrically-heated elevator furnaces for atmosphere annealing at temperatures in the range of 2000° Fahrenheit.

SWINDELL-DRESSLER FU



Large electrically-heated portable furnaces for annealing electrical steels in recirculating protective atmospheres at high temperatures.

ENGINEERING SERVICE Swindell-Dressler Corporation provides a complete engineering service for the steel industry in the design and construction of new plants, and modernization of existing facilities. Consultations arranged gladly on request.

When your requirements are for

HIGH-VOLUME HIGH-TEMPERATURE Annealing

Let SWINDELL-DRESSLER serve!

The elevated-temperature annealing of cut products and small coils is a Swindell-Dressler specialty. Employing advanced design and construction features for high production rates, our range of furnace types and capacities covers every high temperature annealing requirement—including those for special steels, and titanium. Let us go into the details with you, at your convenience.

FURNACES for sheet and strip annealing

Bright annealing muffle-type furnace for stainless tubes. Product is drawn through muffle containing protective atmosphere of hydrogen.

SWINDELL-DRESSLER CORPORATION

DESIGNERS AND BUILDERS
OF MODERN INDUSTRIAL FURNACES

PITTSBURGH 30, PA.

ACCO X-WELD ACID PICKLE CHAIN

A New Alloy Chain Specially Made to Withstand the Heat and Corrosion of Acid Pickling

This new chain resists the destructive effects of both heat and corrosion in normal sulphuric acid pickling operations. It can be used successfully in concentrations of Sulphuric Acid up to 20%, and at temperatures up to 200°F. Made in Acco's famed X-Weld design, this new chain has welds that are as strong or stronger than the chain itself.

Under comparison tests, Acco X-Weld Acid Pickle Chain has proved equal or superior to higher priced non-ferrous chain. In addition, the high alloy content makes it suitable for use in annealing furnaces at temperatures up to 1700°F. without scaling or without losing its acid-resistant properties. When subjected to elevated temperatures, full Working Load Limit of Acco Pickle Chain is restored when chain is returned to room temperature.

Acco X-Weld Pickle Chain is available now in five sizes (9/32" to 3/4") for assembly in Acco Registered Sling Chains. For information, write our York, Pa., office for **Bulletin DH-169.**

ACCO Registered

SLING CHAINS

American Chain Division • American Chain & Cable Company, Inc.

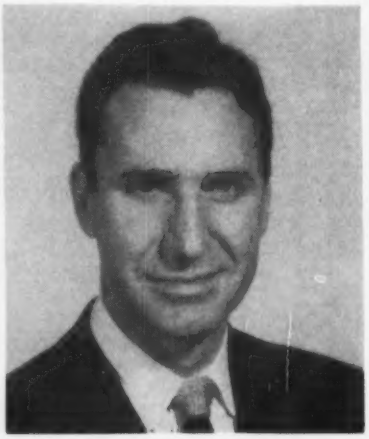
Bridgeport, Conn. • Factories: *York and *Braddock, Pa.

Sales Offices: *Atlanta, Boston, *Chicago, *Denver, Detroit, *Houston, *Los Angeles, New York, Philadelphia, Pittsburgh, *Portland, Ore., *San Francisco

*Indicates Warehouse Stocks

(Continued from P. 67)

West Allis (Wis.) Works; **E. W. Bonness,** named consultant to the director, manufacturing, Industries Group.



J. F. Hines, appointed sales manager, Cutting Tool Div., Brown & Sharpe Mfg. Co., Providence, R. I.

Aluminum Co. of America—**Kirk Usher,** appointed manager, tubular product sales.

Blaw-Knox Co.—**J. G. McLain,** appointed western manager, Foundry & Mill Machinery sales.

D. E. Cummings, appointed general manager, Industrial Gas Div., Air Products, Inc., Allentown, Pa.

U. S. Steel Corp., Consolidated Western Steel Div.—**A. E. Djerf,** appointed Southwest district manager.

H. K. Porter Co., Inc., Riverside-Alloy Metal Div.—**R. H. Wilson,**

appointed asst. works manager, Riverside Metal Works.

G. N. Houck, named asst. to the manager, Electrical Conductor Div., Kaiser Aluminum & Chemical Corp., Oakland, Calif.

H. J. Hauser, appointed manager, field sales, Farrel-Birmingham Co., Inc., Ansonia, Conn.

Minneapolis-Honeywell Regulator Co., Industrial Controls Div.—**R. R. West,** named manager.

SKF Industries, Inc. — **B. M. Smith,** appointed chief industrial engineer.

Elliott Co.—**G. J. Greaney, Jr.,** named Houston district manager.

OBITUARIES

H. B. Horton, 73, board chairman, Chicago Bridge & Iron Co.

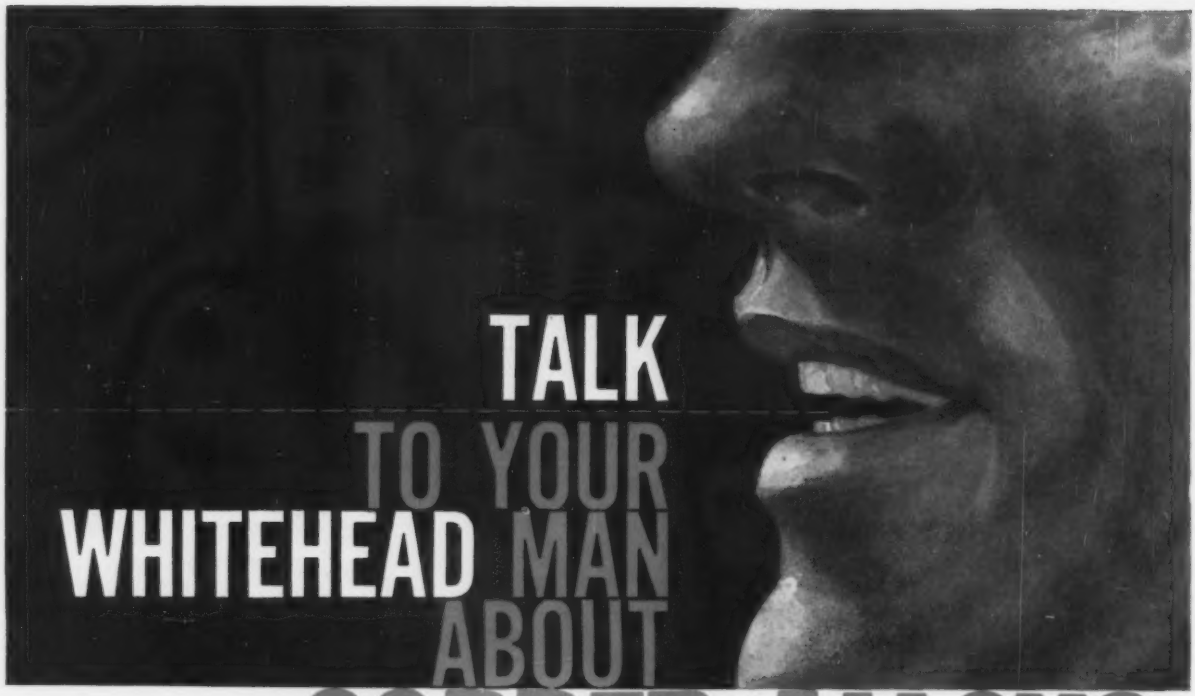
A. M. Norton, former plant engineer, The Bath Iron Works Corp., Bath, Me.

PROTECTING THE PROTECTOR!
the unprecedented launching complex for the TITAN intercontinental ballistic missile is fully protected, above ground and underground, with Zincilate
Artist's conception of Titan Launching Complex; Courtesy American Machine & Foundry Company.

Surfaces of structural steel and aluminum on the Air Force's Titan Missile Launcher System are protected against corrosion with Zincilate. Zincilate is supplied to American Machine & Foundry Company, associate contractor under the Ballistic Missiles Division of the USAF.

Zincilate, as modern as the missile equipment it protects, provides true galvanic protection to iron, steel and aluminum. Easily applied, before, during or after fabrication, without requiring special equipment or even mixing. Now in its 13th consecutive year of sea coast exposure tests, Zincilate has yet to show any signs of rust. Write for complete information; samples available.

PROTECTION that SELLS your PRODUCTS
INDUSTRIAL METAL PROTECTIVES
402 Homestead Ave. • Dayton 8, Ohio • BAldwin 2-6747, 2-6748



TALK TO YOUR WHITEHEAD MAN ABOUT COPPER ALLOYS

Brass, Bronze and many others are stocked in the forms you use

Copper is a key item in the Whitehead line. We maintain large stocks of Copper in many different alloys, such as Tough Pitch Copper, Yellow Brass, Muntz Metal and Tempaloy. You can get these products to meet MIL, ASTM, or other standard specifications.

Stocks of well over 1000 sizes of rod, pipe and tube, almost 500 items of sheet, thousands of fasteners and even twelve different sizes of a specialty item like round telescopic brass tubing, make Whitehead a true "Supermarket" of Copper alloys—no matter what your requirements.

Since we stock all the principal corrosion resistant metals—Aluminum, Clad Metals, Monel, Inconel, Stainless Steel and Plastics, too—we can and do give unbiased opinions on the right material to do the job. Anytime you need anything in the corrosion resistant line, you'll find it pays to call Whitehead first. Interested in Specification Numbers as they apply to Copper Alloys? Write for Publication B-34D.

Call WHITEHEAD METALS *First!*

WHITEHEAD METALS, INC.

303 WEST 10th STREET, NEW YORK 14, N. Y.

Other offices and warehouses: **PHILADELPHIA • BUFFALO • HARRISON, N. J. • CAMBRIDGE, MASS. • SYRACUSE • BALTIMORE • ROCHESTER • WINDSOR, CONN.**

Casting in Argon Lowers Ingot Inclusion Count

A recent six-month controlled study shows that both purging of the mold and protection of the molten metal stream are vital for high quality finished products.

▪ Within recent years, the demand for higher quality metals has been steadily rising.

The aircraft industry, for example, has made the physical specifications for steels increasingly rigid. Particular emphasis has been placed upon the fatigue strength and transverse properties.

Require Cleaner Steels — These high endurance limits give rise to the need for better steels, especially cleaner steels since the desired properties are dependent on the amount of non-metallic inclusions in the metal.

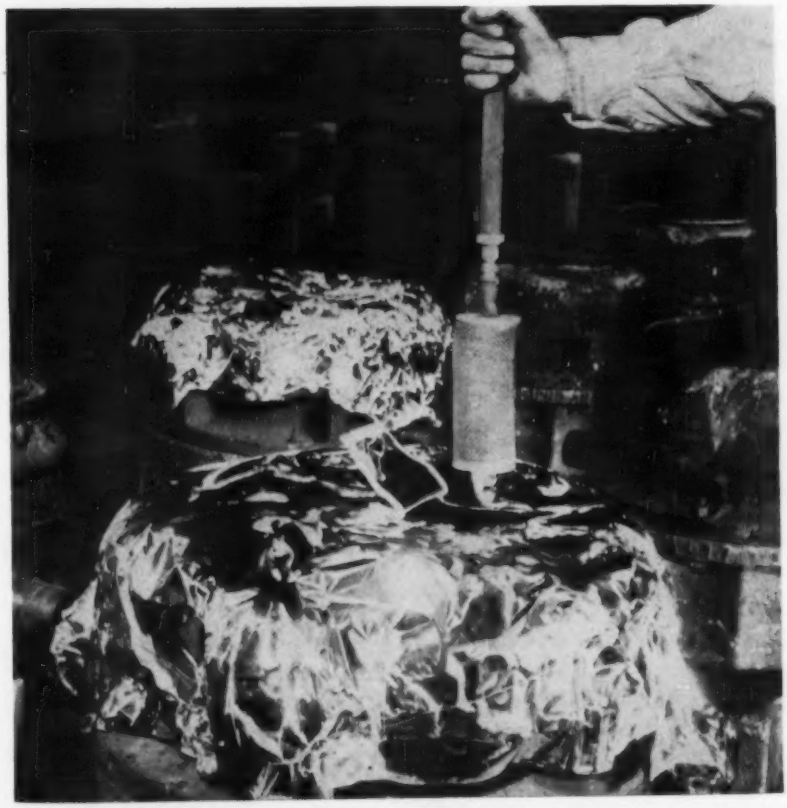
Non-metallics in steel are almost exclusively oxides. Their sources are fairly well known and many can be controlled by refinements in steel-making techniques.

Non-metallics which enter the steel during processing in the furnaces and during the tapping operation have sufficient time to float to the surface while the metal is held in the ladle before teeming the ingots.

At this stage of production, the metal is quite fluid and the inclusions are lighter than the liquid metal.

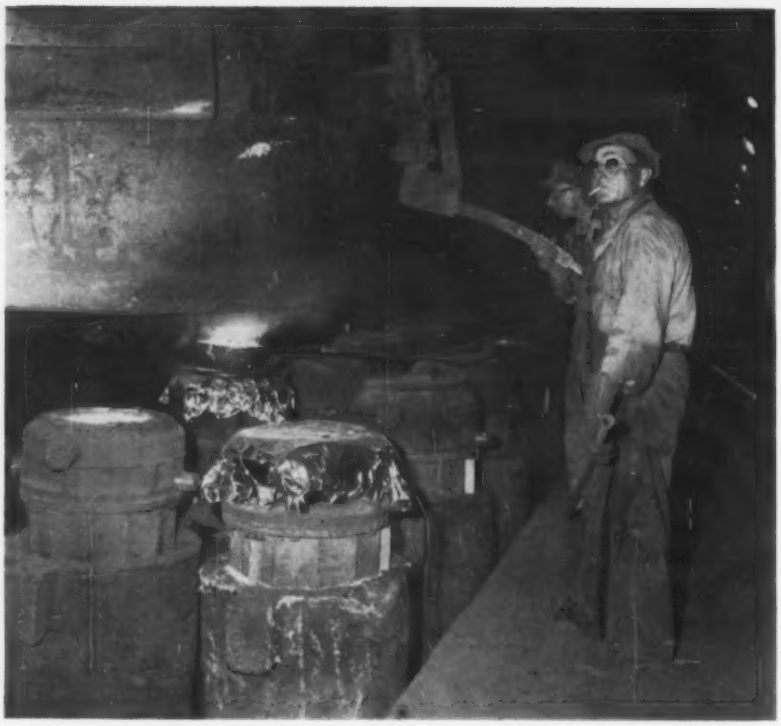
However, similar conditions do not exist after the ingot is cast. Inclusions and other reaction products caused by the molten stream reacting with air are easily trapped in the rapidly solidifying metal.

What Are The Problems?—How



PURGE PROPERLY: Argon distributor nozzle, placed in bottom of mold to displace air efficiently, reduces oxygen content to essentially zero.

READY FOR CASTING: The mold has been purged; the teem stream protector is in position. The ladle need only be lowered.



EASY OPERATION: The use of an argon atmosphere does not interfere with normal casting operations. Note use of the teem stream protector.

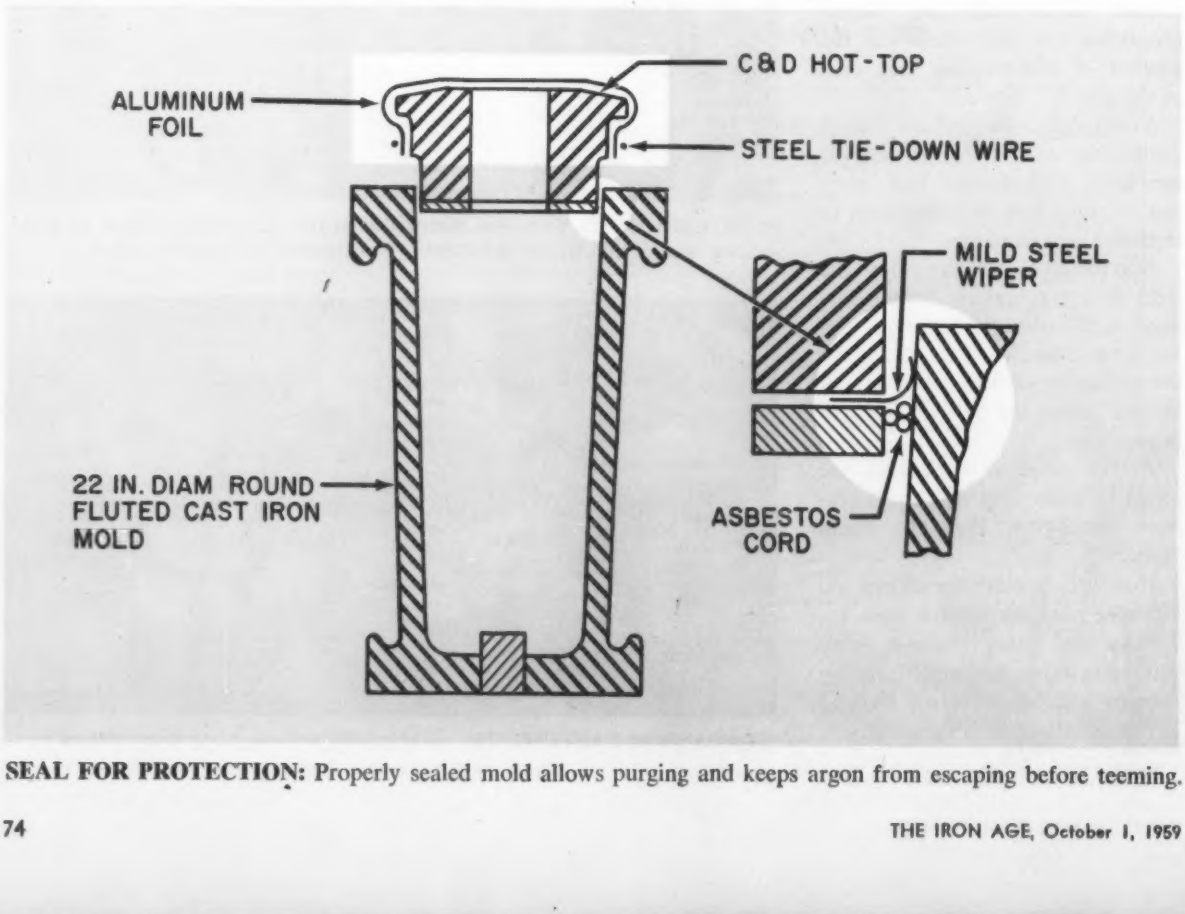
can we eliminate inclusions that originate from the teeming operation? Can we eliminate these inclusions easily and cheaply?

Linde Co., Div. of Union Carbide Corp., feels that it has an answer. To avoid the formation of inclusions during the teeming operations, it has devised a low-cost method of blanketing the molten metal with argon. Thus, the molten metal is shielded from air during passage from the ladle into the ingot mold.

As is well known, many steel mills have, on their own, at one time, tried argon casting. Results were generally unsatisfactory because the molds were improperly purged and because it was felt that protection of the teem stream of molten metal was unnecessary.

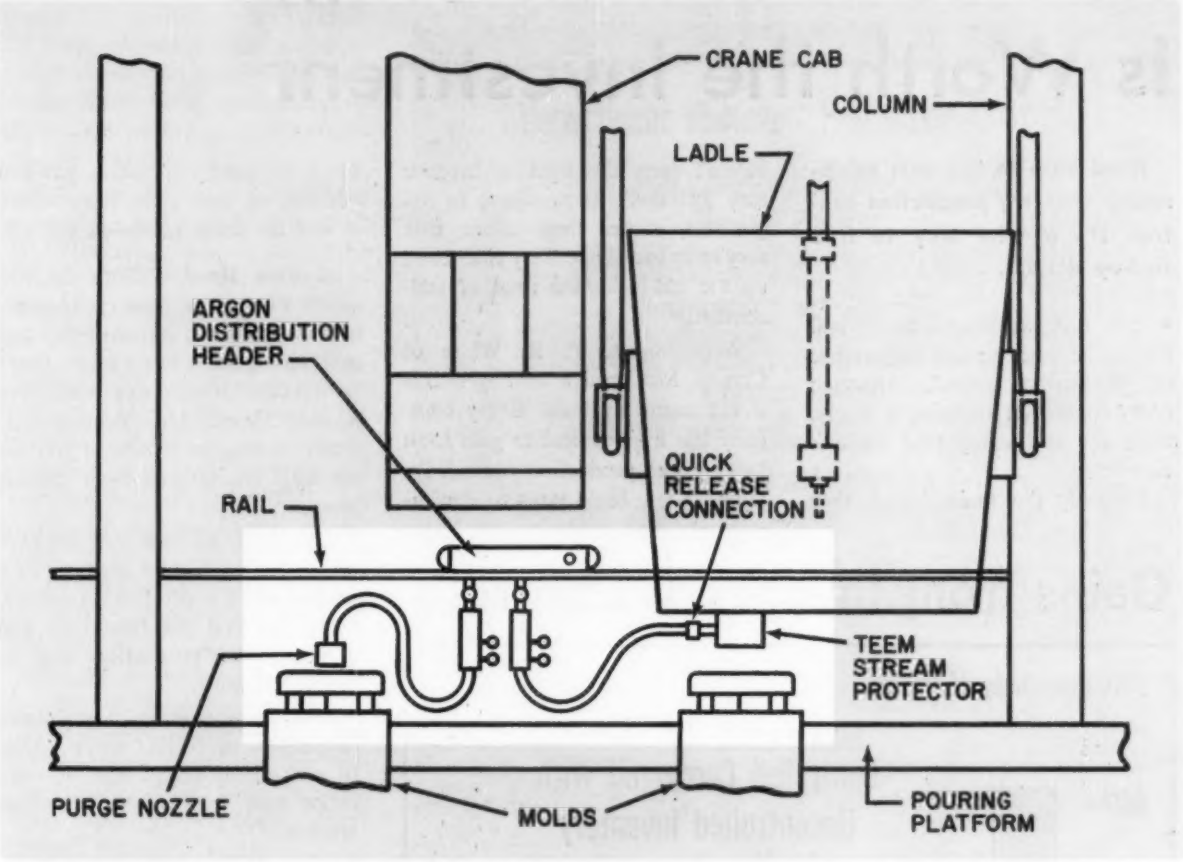
Study Argon Casting—Linde Co. recently completed a six-month controlled study of argon casting in conjunction with Atlas Steels, Lim-

How Seals Keep Argon in Before Teeming



SEAL FOR PROTECTION: Properly sealed mold allows purging and keeps argon from escaping before teeming.

No Lost Time When Casting in Argon



KEEP MOVING: Argon distributor header allows protection of the molten stream while next mold is purged.

ited, Welland, Ont. It is a good example of how cooperative research and development has paid off.

Results have demonstrated that protection of the stream during teeming is definitely required. They have also shown that proper purging techniques are necessary to reduce mold air atmosphere to essentially zero oxygen content.

In this production evaluation test, 140 ingots were cast in an argon atmosphere and compared with an equal number of air cast ingots from the same heats.

The results were very promising. Inclusion occurrence in aircraft quality steel cast in argon was reduced over 40 pct and grinding losses in stainless steel decreased by an average of 9 pct.

Procedure Is Simple—The procedure for obtaining these very significant results is relatively simple.

The mold hot top joint, if not already sealed, is packed with asbestos rope. The hot top is then covered with heavy aluminum foil which is tied down with a soft steel wire.

Next, an argon distributor nozzle is inserted through a flap cut in the foil cover and positioned in the center of the mold bottom.

Minimum Use Of Argon—The argon is thus dispensed in a manner that produces a displacement type purge and allows replacement of the mold air atmosphere with a minimum amount of argon.

Tables are available for determining the amount of time that a given flow rate will take to purge a mold of a given size.

After purging, the distributor nozzle is removed and the flap in the foil is sealed with tape. The teem stream protector is then positioned in place.

This device has two components, the argon distribution pipe and the shroud. The argon pipe is located in the shroud so as to dispense argon around the teem stream just as it leaves the ladle nozzle. The purpose of the shroud is to confine the argon dispensed around the teem stream.

No Lost Time—The equipment is designed so that as the teeming operation is going on, another mold is being purged. It results in no lost time during argon casting.

The ease and low cost with which high quality aircraft steels can be obtained by casting in argon indicate that this may be a major development in steel practices.

Skillful Production Control Is Worth the Investment

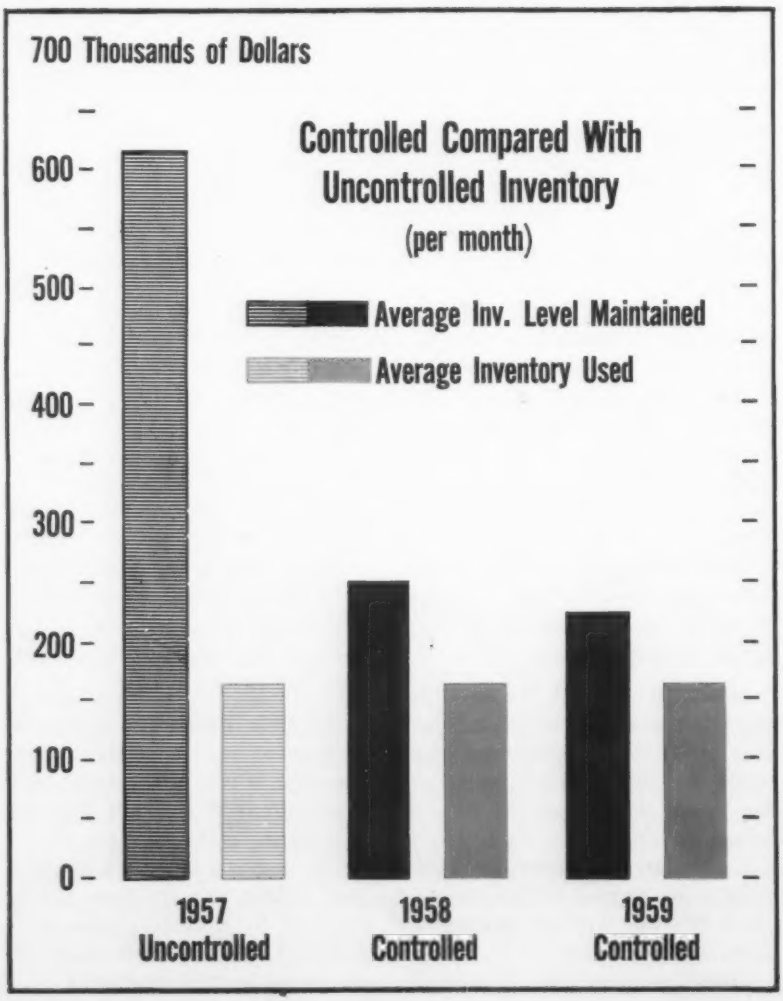
Need cash to buy new equipment? Then try production control. It's a wise way to free tied-up dollars.

▪ The metalworking industry still has to be sold on the importance of production control. Although many companies are using it wisely, there are still many that couldn't care less.

Probably the main reason they haven't seen the light is because they just don't know where to begin. So, rather than admit that they're in bad shape, they ride along on the old-fashioned road of self-content.

According to P. R. White of Cresap, McCormick & Paget, this is not sound business. Every company has a great deal to gain from looking into production control. By taking a few basic steps to streamline a company's operation, you can put lots of cash right back where it will do some good—in the till.

Gains from Inventory Control



A Free Hand—Where do you start? First, give your production control group the responsibility and authority it needs to do a job. Don't let red tape strangle its power. Give it one boss: top management. You're asking for trouble if you put up with interference from outside groups.

Of course, it's vital that the plan run smoothly. It must act both as a service and a control. As a service, it has to feed raw materials and parts to the production line at proper intervals.

And as a control, it maintains inventories at correct levels. Also, in controlling production, it must make sure that master schedules are met.

Right in the Middle—The efficient output of any company depends upon its production control group. This group acts as a manufacturing hub.

Around it revolve such functions as top management and accounting, sales, engineering, and product development. Even purchasing, production, industrial engineering, quality control, and traffic rely on it for smooth flow.

Good schedule conditions gage a plan's performance. As soon as you get behind in production schedules, problems affecting the whole company take over. Yesterday's cordial customer is now just an ex-account.

Payrolls go up because of unnecessary overtime. To get out of the hole, management diverts workers from their regular jobs in an emergency attempt to bring schedules back into line.

How Much Cost?—Some companies evaluate the effectiveness of

their plans by a simple formula. They make a ratio of the cost of production control to sales volume. By itself, it's not a valid yardstick. One company, for example, has annual sales of $600 million and a production control cost of $6 million. Its relative cost is thus 1 pct.

But each company differs from every other in the type of product and processing, and even in the level of its volume. So, on its own feet, the cost ratio isn't too important.

Wasted Effort—A good way to measure a plan's effectiveness is the amount of expediting or follow-up that exists. Suppose a company uses five men for expediting. Their job is one of sending routine paperwork to production lines. In essence, to make sure that a given lot will be at a specific point by a certain time.

But, due to behind-schedule conditions, management doubles the size of the expediting group. And five new faces move right out onto the floor to push parts through. What happens to expediting costs? Up 100 pct.

If there is no increase in production, and yet men have been added to this force, then something's wrong with production control. Ask yourself these questions. What is the follow-up group doing today? What should they be doing? Simple as it sounds, it's a good yardstick of your program.

Before It's Too Late—One company found out about the value of proper production control the hard way. After the facts were all in from its annual physical inventory, management was shocked to learn of an $8 million shortage.

The severe shortage came about because management had not given production control the authority, responsibility or even manpower it needed to set up an effective program. With limited personnel, it was in a poor spot to control and verify all production counts.

Everything in Sight—Being only human, the small staff controlled all counts of finished material and took every possible advantage for credit. Scrapped and unfinished parts were counted as good.

The company took steps to alter the situation. By the time the next inventory period rolled around, the result was an improved plus or minus variance of under 10 pct. An ideal variance, by the way, in inventory count is somewhere between 3 and 5 pct.

In another company, management discovered that both production control and purchasing were following up on purchased parts and raw materials. By transferring 15 persons to other, more useful jobs, the company made much better use of its manpower.

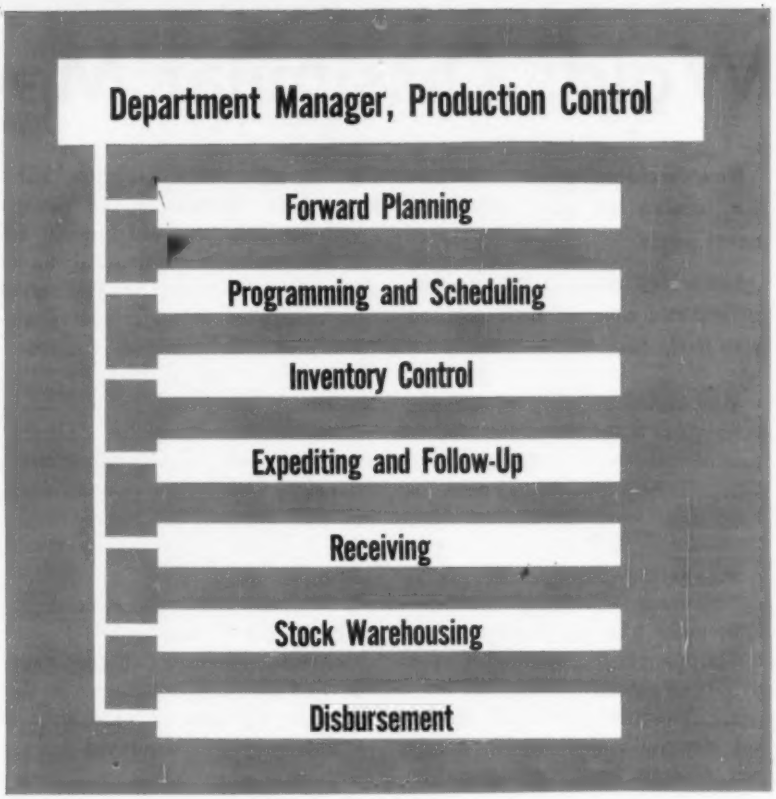
The Right Way—Inventory control is highly important in any cost picture. To get the most out of it, set up proper techniques for economical lot-size production and for money-saving purchase of parts and material. And the best way to gage these needs is from sales forecasts.

Just what is inventory control? It means having enough material and parts to build a given schedule. You must protect your schedules with just enough stock so that shortages don't occur.

Overwhelming Facts — The bar graph shows how one company handled an inventory problem by installing controls. During 1957, when its stock was uncontrolled, the average ratio of inventory level to production usage was 3.8 to 1. That meant that four months of parts were on hand ahead of production.

This company then decided on a 1.5 to 1 ratio. And they reduced their inventory levels by 59 pct. The result? The company, in one year, transformed tied-up, useless dollars into $4,358,400 worth of working capital.

Give the Group Some Authority



Capacitor Discharge Process Welds Dissimilar Metals

New welding process allows the joining of tiny dissimilar metal parts.

Severely cold worked materials can also be butt welded with little loss in properties.

▪ Too often, the lack of welding techniques is limiting the use of our high-temperature metals and alloys. Embrittlement, and need for protective atmospheres are just some of the problems.

But, here's a new process that is making most of welding's most difficult tasks look easy. In short, it makes possible the welding of most dissimilar metal combinations—even miniature parts for missile and electronic applications. Moreover, severely worked metals can be joined, and there's no loss in properties across the weld junction.

Connect To Bank—How does it work? The parts to be joined are connected electrically to the opposite sides of a capacitor bank which is charged to the desired voltage. The parts are brought together under a mechanical force. The capacitor bank then discharges its energy at the interface of the two pieces to be joined. The metal melts and a joint is made.

There are two very significant factors in this capacitor discharge unit. For one, heating takes about 0.0005 seconds with visible arcing. Second, the heat affected zone, produced during the welding operation, is about 0.001 in.

Actually, these two factors are related. The heating time is deliberately made small so that heat transfer is kept to a minimum. In this manner, the heat affected zone is likewise kept to a minimum.

Slip Cannot Occur—Why the emphasis on a thin zone? There are several reasons. Consider the butt welding of wire. The recrystallized zone, in effect, is sandwiched between severely cold-worked metal of high strength. Thus, as the inventors claim, "slip cannot occur in the very thin joint."

Moreover, the formation of brittle constituents, grain growth, and other deleterious effects that are heat dependent, are reduced.

Development of this process was prompted by difficulties in preparing proper thermocouple beads from light-gage wires. On the theory that the smaller a thermocouple bead, the better the response, the originators, Emmco Development Corp., Brooklyn, decided to electric butt-weld the chromel-alumel elements.

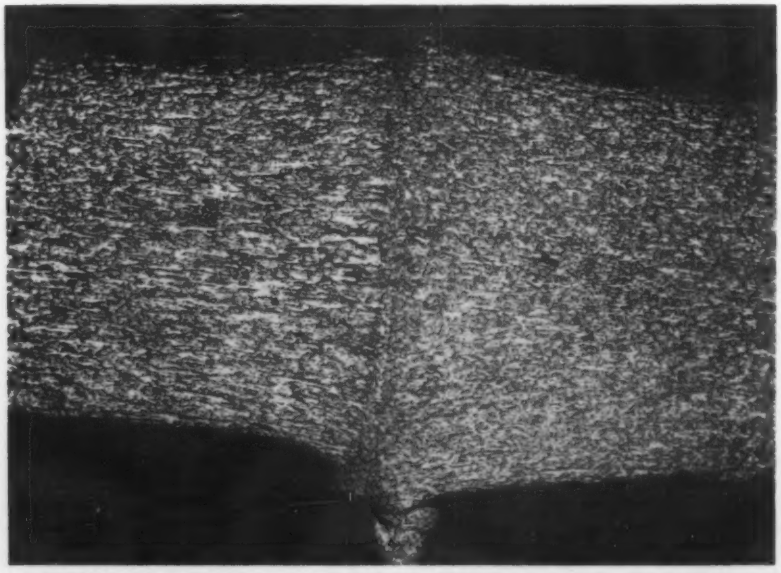
Also, they feel that accuracy is improved by elimination of a long junction wherein a temperature gradient could exist.

Welds Most Combinations—The process was soon developed to where combinations as tungsten to beryllium-copper, tantalum to aluminum, titanium to aluminum and others were being welded. Apparently, tungsten to tungsten welds and leaded brass welds are the only limitations of the process.

In what sort of applications are these odd metal combinations being used? For example, a telemetering unit in a guided missile requires very small, sensitive and reliable commutator switches. Arranged in a sweep are 160 tiny units each consisting of a tungsten head welded to a beryllium-copper body.

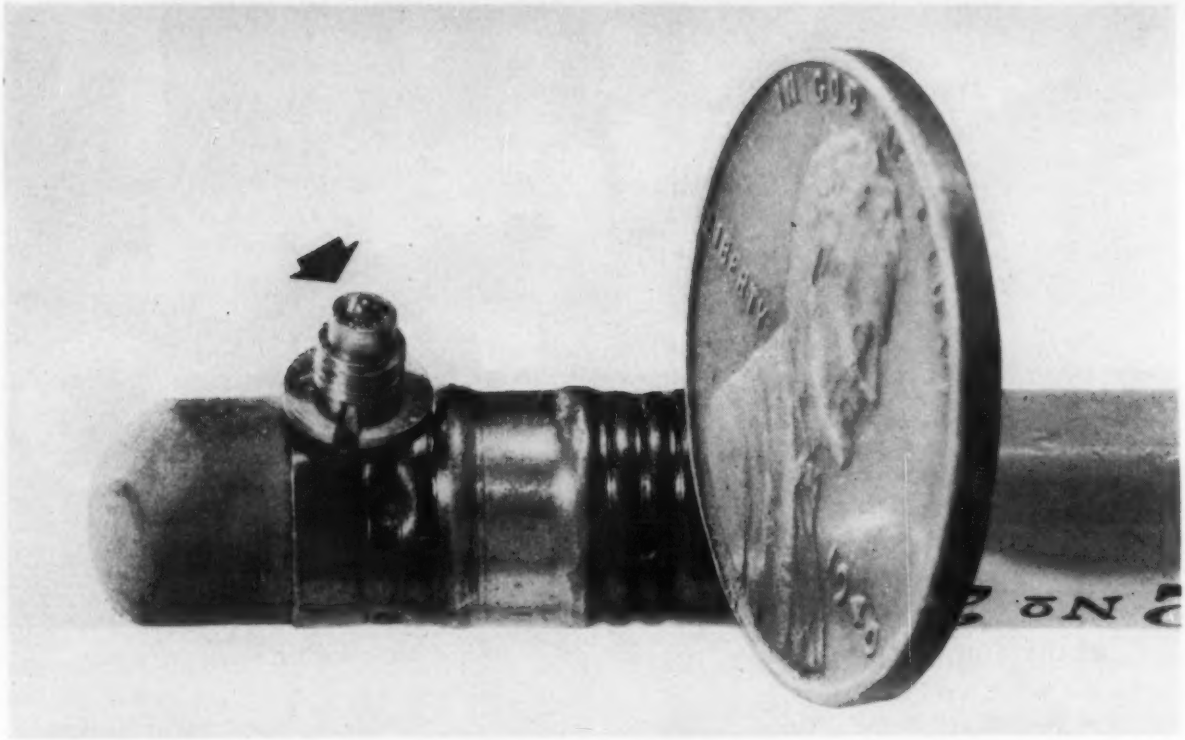
Tungsten Supresses Arc—Tungsten is used because it is, perhaps, the best contact material from an arc suppression viewpoint. The beryllium alloy offers a high strength-weight ratio.

An excellent example of what this "Fridg-Flash" process can do is the tungsten carbide - stainless steel component shown in the pic-



ALMOST NO ZONE: Because of the short high-temperature heating cycle, the heat-affected zone is very thin—about 0.001 in. Mag.: 35X.

This Tiny Ball and Socket Joint Is a Weld



WELD WITH PRECISION: This gyro thrust bearing is made of a tungsten carbide ball, 0.039 in. diam., welded to a stainless steel screw. Center of ball is within 0.0005 in. coincident with center of screw.

ture. It is used as a thrust bearing for a gyro. A tungsten carbide ball, 0.039 in. diam., and having a sphericity of five millionths of an in., is welded to a stainless steel screw.

Get No Distortion—Because of the very short welding time, the sphericity is unaffected, and the center of the ball is within 0.0005 in. coincident with the center of the screw. Since there is no wobble to speak of, induced precession in the gyro is kept to a minimum.

Industries connected with the defense effort aren't exclusive in their needs for capacitor discharge butt welding. Consider the continuous drawing of tubing using a "floating mandrel." When the tube reducer operators weld a new length of tubing, the outside can be easily dressed.

The flash on the inside of the tube, however, makes further drawing very difficult, if not impossible. This problem does not arise when the joint is an electric butt-weld.

Butt Weld Wire—Another use that immediately suggests itself is the continuous drawing of wire. Drawing and redrawing operations, to be done most economically, require high strength butt welds to eliminate die string up, possible scrap and short spools.

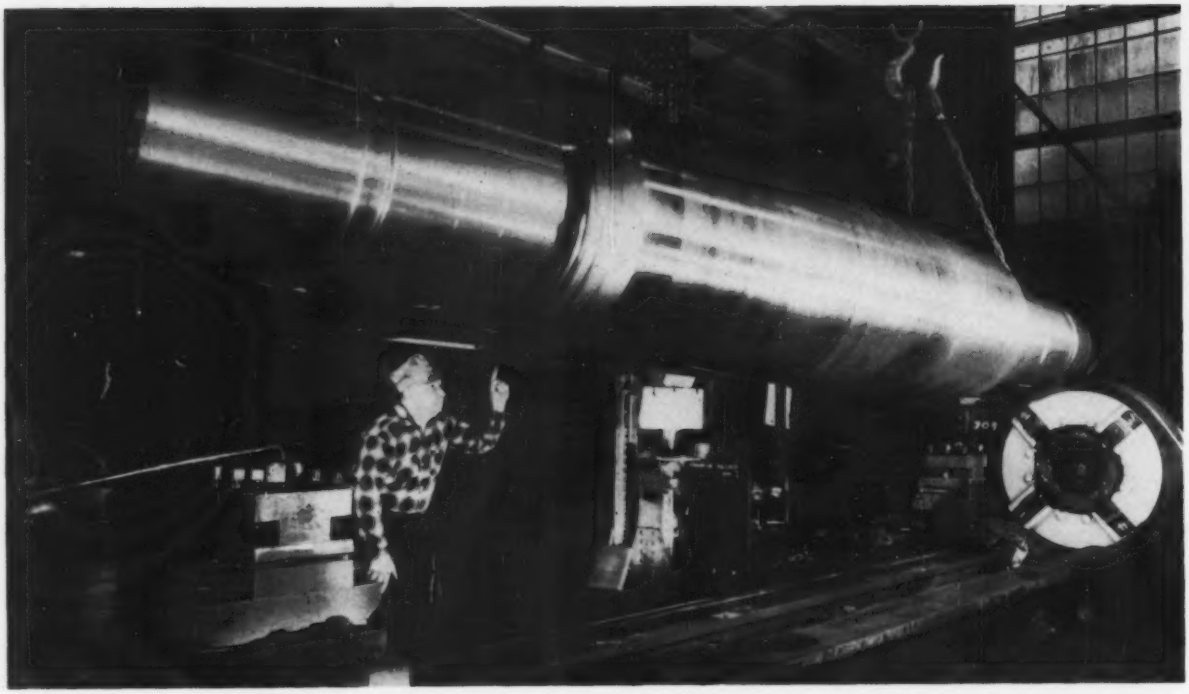
The strengths of butt welds are important to engineers using welded cold drawn wire. Calculations are based on the strength of annealed metal and then this value is corrected for joint efficiency.

By controlling and limiting the heat input with this capacitor discharge process, welds strength approach the initial strength of the wire.

Weld To Evaporated Metal—Many high temperature resistors are made by evaporating metals such as gold and platinum onto porcelain or glass. Suppose you want to weld to this metal. Can this capacitor discharge method do the job? The answer is a qualified "yes." It can be done provided the melting point of the film is higher than the metal that is being welded to it.

This process needn't be restricted to tiny parts even though it is being used mainly in this vein. According to Emmco officials, only the size of the welding machine need be made larger. To date, they are butt welding rod up to ¼ in. diam. Tubing having a material cross-section as much as ¼ in. can also be welded.

Emmco's plans for the future include a portable welding unit. It is being designed specifically for the repairing of multiple strand lines such as telephone cables. These cables may consist of as many as 200 separate wires that will have to be individually spliced in case of a break. This unit will butt weld these wires in much less time.



READY FOR MACHINING: Large plate mill roll is lowered into place for a machining step.

Why Is Mill Roll Manufacture Still a "Custom" Business?

By **E. P. Sandbach**—Chief Metallurgist, Mackintosh-Hemphill Div., E. W. Bliss Co., Pittsburgh

Roll producers are still searching out many of the "whys" of roll performance.

Until these questions are answered, mill rolls will still have to be tailored to a specific job.

▪ Visitors to a rolling mill are most often interested by the shapes into which metal is being formed — whether it be slabs, plates, sheet or strip. But how often do they consider the rolls themselves?

The art of rolling is a well-studied science. Likewise, the structural changes on the metals being formed have been carefully researched.

And yet, much of what happens to a set of steel rolls while they are in contact with the material being rolled remains something of a metallurgical mystery.

A Custom Business — Heavy pressures, high heat, and conditions of severe wear lead to some strange phenomena. That's why roll making is strictly a "custom" business. There is no such thing as a standard series of "roll steels" in the sense that you buy certain tool and die steels for specific jobs.

What considerations must be taken into account before selecting rolls for a particular job? What types of failures are rolls subject to? How can they be prevented?

An analysis of these problems might best be tackled by considering rolls with flat bodies. These rolls, used for slabbing, plate, hot strip and cold reduction mills, are relatively simple in form. But they account for more than half the total tonnage of finished steel produced by U. S. mills.

Most Severe Applications—Slabbing and blooming are the most severe of all roll applications. In these primary mills, the heat is intense, and the rolling pressures are

high in order to squeeze the ingot down as fast as possible.

To attack the problem of roll selection for these mills, the roll maker must know the past history of the mill, the products it rolls, and its speed and power. He must also know the details of its cooling water supply and the method by which it is applied.

But, he does know from experience that cast steel rolls, in general, give a good account of themselves in slabbing mills. Many are made of plain carbon steel. More often, they are cast from chrome-moly alloy steel or nickel-chrome-moly alloy steel.

"Firecracking" Occurs — Most failures of rolls in these mills stem from a condition known as "firecracking." The surface of a "firecracked" roll is laced with a network of cracks. Often these cracks will progress to a point where the roll will break.

Metallurgists have spent considerable time in an effort to determine what they can do to improve a roll's resistance to "firecracking." The chief suspect is the carbide network that forms as the cast steel cools from the molten state.

This carbide network appears to provide the pathways along which the cracks run. Thus, roll makers feel that by eliminating the carbide network, the roll's resistance to "firecracking" should improve.

In actual practice, this is done by heat treatment. Fortunately, rolls thus heat treated show excellent resistance to "firecracking" in slabbing and blooming mills.

Mills Are Unique—The postulate that no two mills are alike particularly applies to hot strip mills.

And as mill types vary, so do their products. Strip steel coming from the last stand may range from 0.070-0.250 in. thick. It may be low carbon steel, high carbon steel, silicon steel, or even stainless steel.

Under these conditions, the roll maker must know everything he can about the given mill, including the way rolls have behaved over the years in each of its individual stands.

The work rolls in the finishing stands of a hot strip mill are usually high-alloy cast iron. They are double poured to provide a hard wearing surface on the working face and a soft, tough core in the center and necks.

"Banding" Takes Place—One of the most trying problems occurs in the intermediate stands of continuous and semi-continuous mills. This is the phenomenom known as "banding." In extreme cases, "banding" may make it necessary to change the work rolls every two hours.

Nobody is absolutely certain about the exact mechanics of "banding." However, the symptoms are obvious. Metal builds up on the work surface of the roll into a band or bands which may completely girdle the roll. It leaves its mark on the surface of the strip being rolled and produces unacceptable variations in the thickness tolerance of the finished strip.

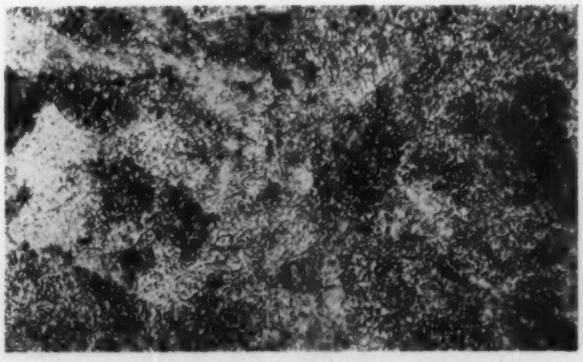
The most widely accepted theory on "banding" is that it results from excessive scale formation on the strip being rolled. The rolls pick up bits of scale which add to themselves under the rolling pressure until they build into the roll-girdling bands.

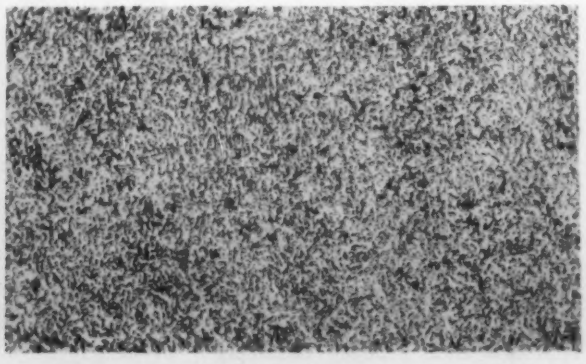
Use Water Spray—An important fact that helps to substantiate this theory is that "banding" is often controlled by the use of very high pressure water spraying on the offending stands. The sharp jets of water not only cool the rolls but sluice away the scale from the bite of the rolls.

More important is the approach that has been made to the problem by the roll makers themselves. It has been found that a high-carbon alloy steel roll, specially heat treated to cut "firecracking" and slippage to a minimum, goes a long way towards eliminating "banding." This occurs even in those mills where the water supply is scanty and of low pressure.

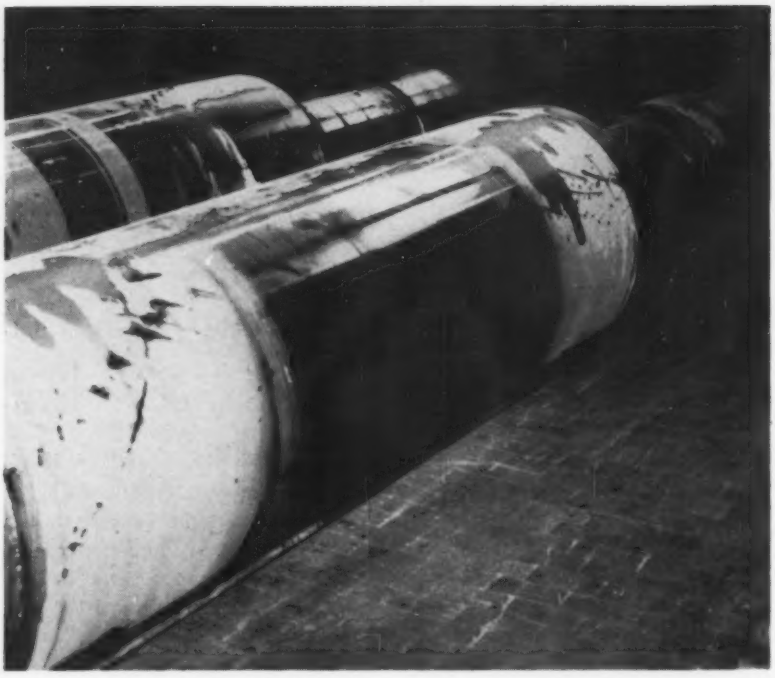
Spalling is the chief service problem of back-up rolls. This flaking out of bits of steel from the surface of the roll is usually caused by excessive working of the metal in that area.

Narrow Rolls Spall—The most severe cases of spalling are to be





IMPROVE THE STRUCTURE: Carbide network (left) of nickel-chrome-moly blooming mill roll has been eliminated (right) by heat treatment. There are now no definite paths for "firecracking" to follow.



"BANDING" IS A PROBLEM: Bands, caused by metal built up on the work surface of the roll, leave unacceptable marks on the rolled material.

found in the very narrow hot-strip mills, since most of the output is close to the mills' maximum width capacity. Eventually, the back-up rolls become hollowed out so that only a few inches at each end of the roll body are carrying the load. As a result, these areas tend to spall badly unless special precautions are taken.

One of the measures in use is to shot blast the ends of the work rolls before campaigns where minimum-width strip is to be rolled. The theory is that the blasted ends of the work rolls increase the rate of wear on the outside edges of the back-up rolls to a rate where it keeps pace with the hollowing out of the center. It thus prevents the build-up of stress concentrations at the ends of the rolls.

Another way to obtain uniform wear across the face of the back-up rolls may be a differential heat treatment which provides greater hardness at the centers than at the ends of the work surface. A final approach is to produce extremely hard back-up rolls that resist wear better at all points.

Need Strength and Smoothness— By and large, alloy iron rolls, double poured from maximum strength, perform the lion's share of plate rolling in the U. S.

An important difference between the requirements of strip rolling and plate rolling is that the work rolls in a plate mill must operate as finishing rolls all the way from new to scrap diameter. This means that the hardness cross-section must show minimum variation as the roll is redressed down from its original diameter over its useful period.

The beauty of the double-poured iron roll is that the shell iron of the first pour can be balanced to provide a uniform hardness through the several inches of depth between the two diameters.

Lower the Hardness — Roll makers usually furnish these rolls somewhat softer than hot strip mill work rolls. This lower hardness provides the extra resistance to "firecracking" that most plate mills need.

Among the back-up rolls used in 4-high plate mills are to be found the world's largest mill rolls. Some of these monsters weigh eighty tons or more. They represent the most difficult rolls that a roll maker has to produce.

Heat treatment on these rolls must be very carefully controlled to avoid rapid temperature changes which would set up high stresses in such large masses of metal.

The most common causes of failure of plate mill back-up rolls are spalling and fatigue failure of the necks. As a result, roll makers spare no effort to produce sound, strain free castings for this application.

Speed Up Cold Reduction — Speed and more speed is the by-word. Each new tandem mill seems to be built faster than anything previously designed. Maximum delivery speeds of 3000 ft per minute or faster are increasingly common. Some temper mills deliver the strip from the last stand at rates approaching 75 miles per hour.

Thus, the loads keep getting higher. As a result of the high unit pressures needed to cold reduce steel, the rate of spalling on both work rolls and back-up rolls is high.

Work rolls are either forged and hardened alloy steel or double poured alloy iron. Oddly enough, the alloy iron rolls resist marking better than the forged steel. The explanation is quite simple, however. The hardness in the alloy iron comes from a hardened steel matrix surrounded by iron alloy carbides.

The choice of alloy iron or forged steel work rolls often depends entirely on the quality of surface finish desired. Among the virtues of iron rolls is the fact that they provide good hardness to a depth of some two inches below the original surface.

On the other hand, forged steel rolls must be rehardened after 1 inch has been removed from their surface. But forged rolls show better resistance to spalling and usually hold a blast better.

Blocks Speed Furnace Repairs

The labor clock really ticks off the hours when you reline with firebrick.

Here's a refractory that cuts time down.

▪ What are you spending for labor to rebuild furnace walls and roofs? Instead of taking the time to stack 16 firebricks, suppose you covered the same amount of space with one block. Think what that would mean in labor costs.

Sure, they're heavier than firebrick. But the heaviest of the lot weighs 64 lb and the lightest ones are only 21 lb. These blocks can give you quality too. They resist slag penetration and erosion and just about eliminate spalling. Also, their insulating values spell less heat storage.

Ten Times Faster—Produced by Refractory & Insulation Corp., New York, these new blocks will reline anywhere from three to ten times faster than will ordinary firebrick. Called Furnace Blok and Roof Blok, you can get secure bonds from one block to another by adding a special fill.

The manufacturer packs the fill in 100-lb bags in dry form. It's mixed with water right on the site. You use buckets or guns to apply the fill. Then, frequent puddling and rodding are needed to insure proper set.

For best results, lay five courses, open-end-up. Then add fill. By the time you're finished with that step, you can move right on to the next course.

Joins to Steel — The blocks, whenever needed, can be joined to steel casing or to buckstays. Use bent metal strips, welding one end to support. Lodge the other end of the strip into the fill area of the wall. For better wearing quality, it's wise to paint the latter metal end with R & I Mastic Coating.

You can buy Furnace Blok to suit various maximum hot-face temperatures. They include 2000°, 2400°, 2500°, 2600°, 2700°, 2750°, and 3000°F.

Reference books give the material a tongue-twisting name. Monolithic refractory. It means single stone. It's just about that strong too, once the wall's built.

Relines Roofs—Roof Blok has a slightly different shape, formed to give strong bonds with the horizontal I-beams that support the roof. A single layer of this material is usually sufficient.

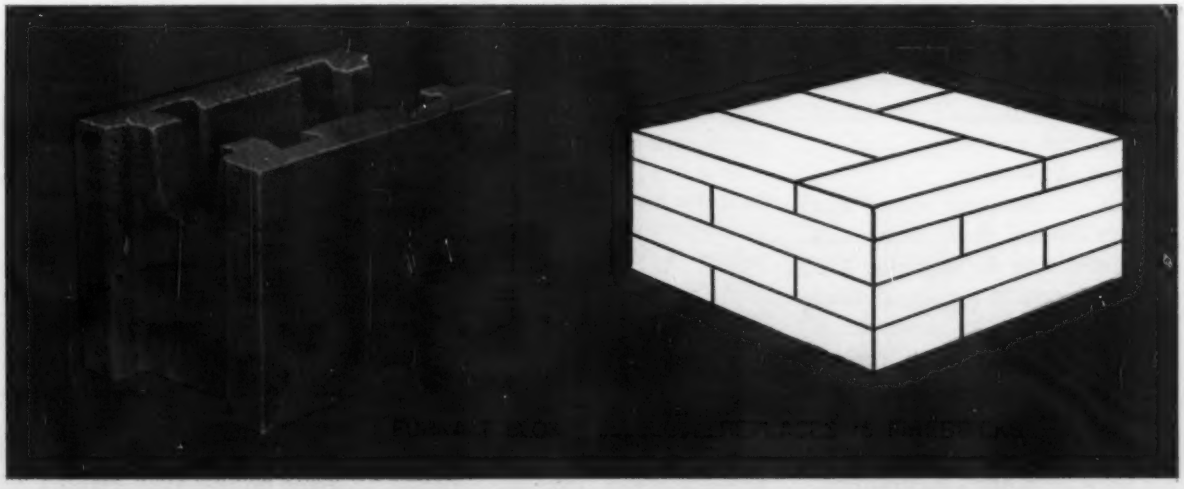
Trouble in the past prevented the lining of furnaces with monolithic materials, since they required wooden forms. But these new shapes now eliminate such a need.

Okay in the Field—Reports from the field underline the material's value. In one furnace, the same monolithic wall's been in service for a year. In fact, it will probably be another six months before it's replaced. Previous lining failed after three months.

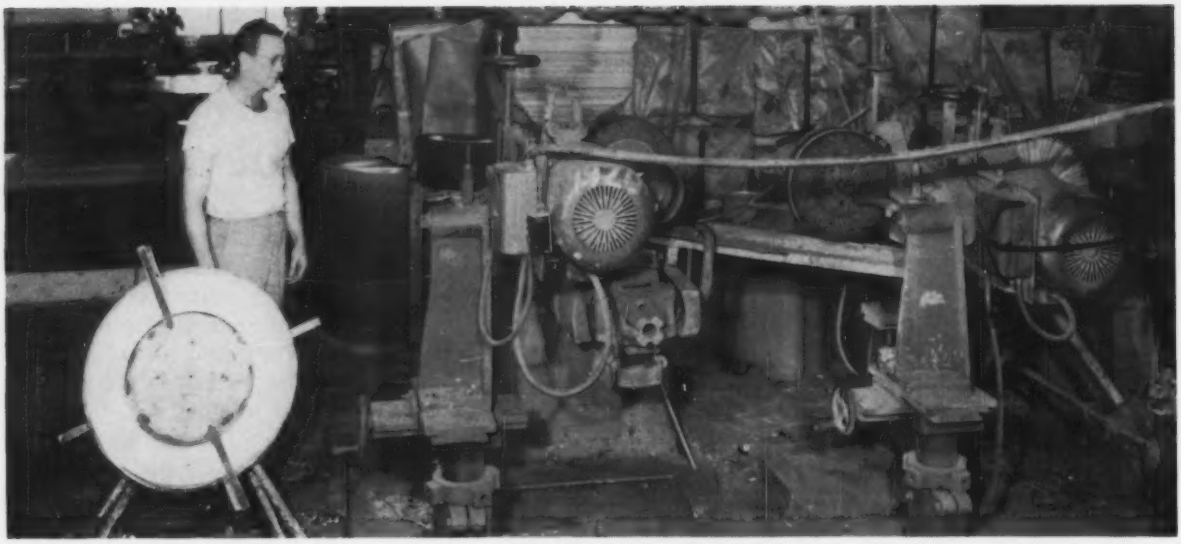
Then there's a brick manufacturer using Furnace Blok as a refractory in its large tunnel kiln. This company claims that its new lining goes up six times faster than firebrick.

Other current uses of the material are in heat-treating furnaces, carbon-electrode baking furnaces, and even incinerators.

How Refractories Compare in Size



TIME SAVER: Depending on the type of refractory needed, one block structure replaces up to 16 firebricks. This results in drastic reductions required for labor to rebuild furnace walls and roofs.



TRY TEST RUN: In experimental setup, adjustable pressure wheels buff stainless steels to a color match.

Buff Stainless for Color Match

By **Adam Zimmerman**—President, Production Finishing Corp., Ferndale, Mich.

Does match of stainless decorative parts pose a problem on your product?

Here's a new development that offers a simple—and money saving—solution.

▪ Work on the problem of matching the varied hues of stainless steel has finally turned up a practical solution. Moreover, early production runs confirm that it will afford large savings in finishing hard-to-match stainless pieces.

Most metalworking plants that produce finished products are well acquainted with the difficulty. The lighter the gage of a piece of stainless steel, the brighter its surface.

Take a typical part like a windshield wiper arm. If you make it up of components stamped from three different gages of stainless stock, it will show three tones of brightness. This means you'll have to perform expensive, after-form buffing-operations on the unit to achieve uniform color matching.

Even then, results are not always satisfactory because of unavoidable variations and imperfections in stock.

Color Is Problem — There are literally thousands of different production parts made of different gages of stainless steel where color matching is a problem. Decorative hardware, stove rings on household appliances, and wheel covers on automobiles are examples.

Of course, buffing a stainless part for color match after forming can be done on automatic machines. If volume is high enough to justify such equipment, and proper processing is used, you can generally get results desired.

But with after-form buffing, you have many pieces to handle. And automatic buffing machines do not offer the ultimate in changeover flexibility. Often, there are depressions and corners in formed parts that are practically impossible to reach to get good color matching by buffing.

Require New Method—A better method would be to pre-finish the various gages of stainless steel coil-stock before forming and assembly. Further, this would provide significant production cost savings. So we set about developing such a method.

After extensive production development tests, a new technique proved highly successful. It gives excellent color matching of various stainless steel gages by automatic buffing operations performed on the material when it's in coil form.

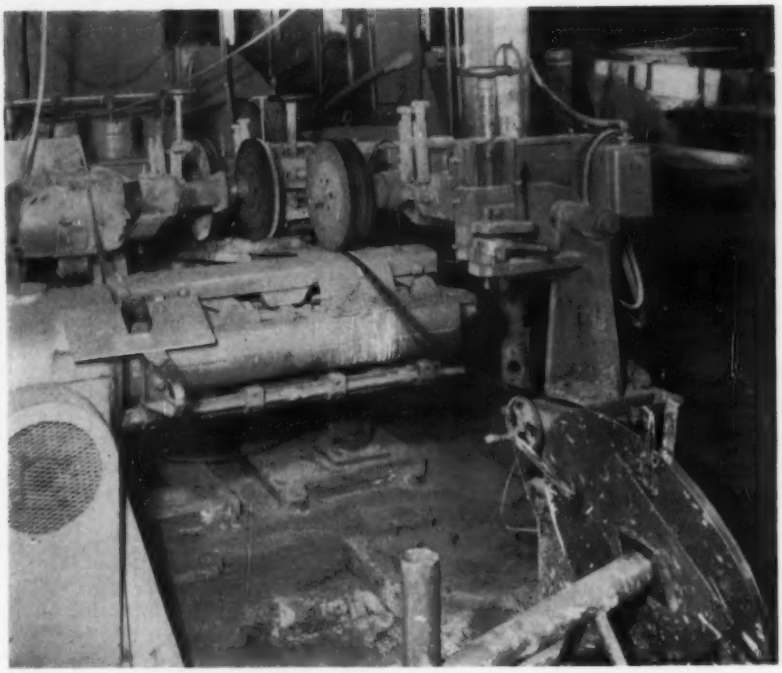
In these production development tests, three adjustable buffing lathes were equipped with buffing wheels and placed in tandem. The stainless steel strip was fed under the wheels in a continuous finishing operation. Operators applied buffing compound manually at three buffs. Consistently uniform color matches for various gages of coil stock were achieved.

Color-Buff Stainless Automatically

Automatic Setup — Buffing a stainless steel strip for color match is basically a sequence of cutting and coloring operations. Cutting wheels remove a small amount of stock from the surface, and eliminate blemishes and imperfections that might cause rejection of finished parts.

The work then feeds past successively softer buffs to achieve a high quality, uniform finish. Stock ranging from 0.015 to 0.050 in. thick can be color matched on such progressive finishing operations.

The production setup developed for color-match buffing of stainless steel coils consists of a series of adjustable lathes. They operate in conjunction with coil pay-off and take-up reels. These lathes each have in front of them a fabricated stand that supports a shoe. This shoe holds the coil strip in contact with the buffing wheel.



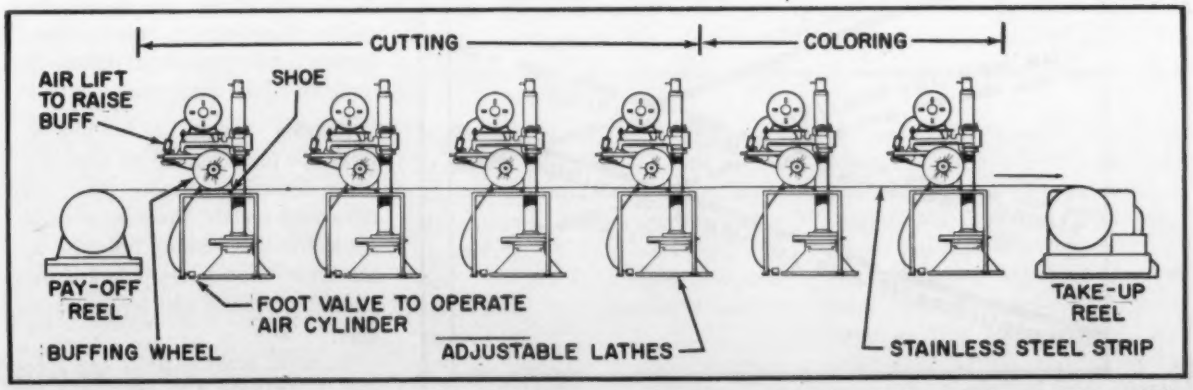
BUFF IN TANDEM: Buffing line works on narrow coil of stainless steel stock. Note the arrangement of the buffing wheels in tandem.

Air Helps Operation—The buffing wheel spindles on each lathe are pivoted. They lift up by means of a foot-valve operated air cylinder. This provides a fast method of raising the buffs for threading the coil strip. And it maintains a uniform, controlled work pressure on the buff.

An automatic feeder system applies buffing compound to each of the buffing wheels. The line illustrated in the sketch uses a series of six adjustable lathes. The first four of these machines perform the cutting operations, and the last two do the coloring operation. Equipment used is an adaptation of existing machinery that has been production-proven over the years.

Size Range—Coil stock ranging from ½ to 24 in. widths can be finished on an automatic color buffing line. You must determine the exact buff and compound specifications by the usual production development methods.

This new concept of color matching stainless steel in coil form frees metal processors and metalworking plants of many former limitations in finishing stainless parts. There's a double payoff to be garnered from this short cut: higher quality of finished part assemblies; much lower finishing costs.



IN-LINE FLOW: Cutting wheels get rid of imperfections that might cause rejection of finished parts by removing a small amount of stock from surface. Color wheels impart even tone by use of proper compound.

How Manufacturing Methods Cope with Future Space Projects

Whenever there's a breakthrough in space technology, you can bet there're new problems in manufacturing.

Here are some of the trends expected in the years ahead.

▪ Putting advanced designs into practice depends heavily on manufacturing capability. New complex processes require greater specialization to produce the weapons concepts that industry foresees in the next 10 years.

These manufacturing demands are predicted in the second section of the Annual Forecast Report, recently published by Aerospace Industries Assn., Los Angeles. The first section on engineering trends was covered in last week's issue (The IRON AGE, Sept. 24, p. 115).

Time cycles between conception to series production are becoming shorter. At the same time, methods and equipment are becoming more complex.

Work at High Heats—Extensive developments will be needed to keep pace with advanced designs. Keynote factor in working with new materials will be very high fabricating temperatures, with protective coatings or atmospheric control to prevent contamination.

Fabrication and assembly trends are toward steel brazed and welded airframes. Two chief manufacturing and tooling problems will be the need for close tolerances and brazing, welding and heat treating in carefully controlled atmosphere.

Combined processes are apparently going to be necessary, for instance, welding and machining in a welding positioner.

Tooling Critical — Precision-sub assembly tooling will have to locate details through brazing and heat-treating processes to produce stress-free, dimensionally-accurate units. A minimum of drilling, dimpling, and trimming operations can be performed on detail parts that have been hardened before assembly.

In welding, mechanized equipment must insure precision and consistent weld quality. This is especially true in such assemblies as tapered sheets in dimensions of 10 x 20 ft tapering from 0.005 to 0.500 in.

More accurate control of welding variables is a must. There will be a need for joint followers that are unaffected by contamination for joining brazed sections.

Weld Special Metals — Equipment with travel rates of 2 to 300 ipm are foreseen for welding molybdenum and titanium alloy sheets. Resistance welding requirements include a need for monitoring systems to determine proper preweld settings.

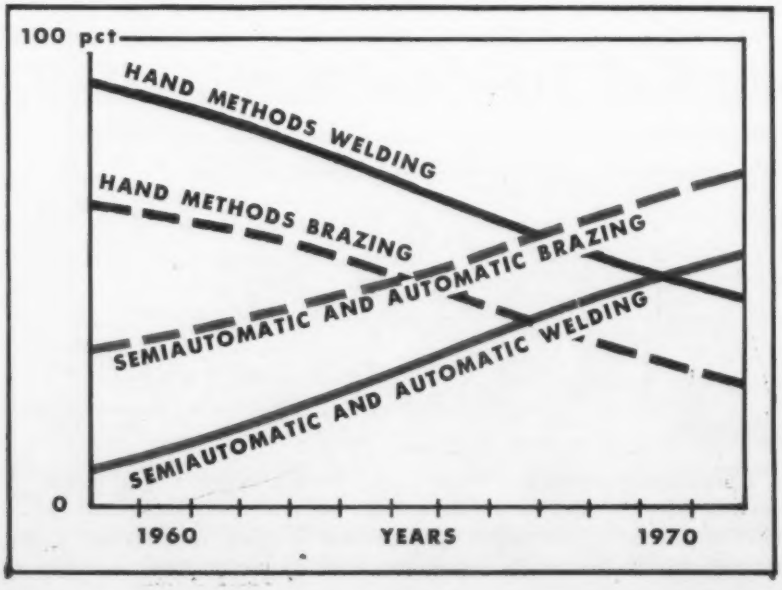
Increasingly important will be clamping fixtures and positioners to handle comparatively delicate parts, such as with thin sheet of 0.005 to 0.020 in. Improved ceramic materials may be adaptable for welding fixtures.

Controlled atmospheric conditions may be achieved through further development of weld zone purification processes. New possibilities might be molecular bombardment, pressure welding, or a plasma jet method.

Brazing Trends — In brazing, new-type furnaces will be needed to braze ceramics, cermets, glass, and refractory metals. Progress must be made towards heating only the assembly to brazing temperature with minimum tooling and furnace-brick heat.

Portable brazing units are foreseen for localized brazing of large final-assembly panels. Improved

Joining Methods Show Trend



techniques in preparing detail parts for fit-up are required to reduce amount of filler alloy needed.

In bonding, the stress will be on use of ceramic adhesives to bond large contoured parts, perhaps even entire assemblies, such as wings or fins. Demands will increase for light-weight curing fixtures having thermal properties similar to those of the material being bonded.

Fasten for High Strength—In addition to more mechanization, numerical controls may be used to boost reliability and lower costs of bonded structures.

For upset riveting of 320,000-psi materials, it will be necessary to develop squeezers and dimplers that can apply much greater force than is now available. They'll have to be designed to develop much higher heats.

Adoption of hot forging techniques with resistance heating may be feasible. Hot dimpling equipment will have to increase its working temperature to 1300°F.

Methods will be needed for dimpling high-strength materials having low ductility at room temperature. Continued work is needed on cold-flow dimpling to permit the working of 280,000-300,000 psi material having 4 to 10 pct elongation at room temperature.

Join Without Heat—A method of joining metals without heat will be needed. A prospective development would be the use of metallic compounds placed in the joints, with fastening accomplished by a chemical reaction triggered by gas.

During the next 10 years more and more emphasis will be placed on the developing high-strength steels of 300,000 psi and titanium alloys with yields of 200,000 psi. What will the effect be on metal shaping?

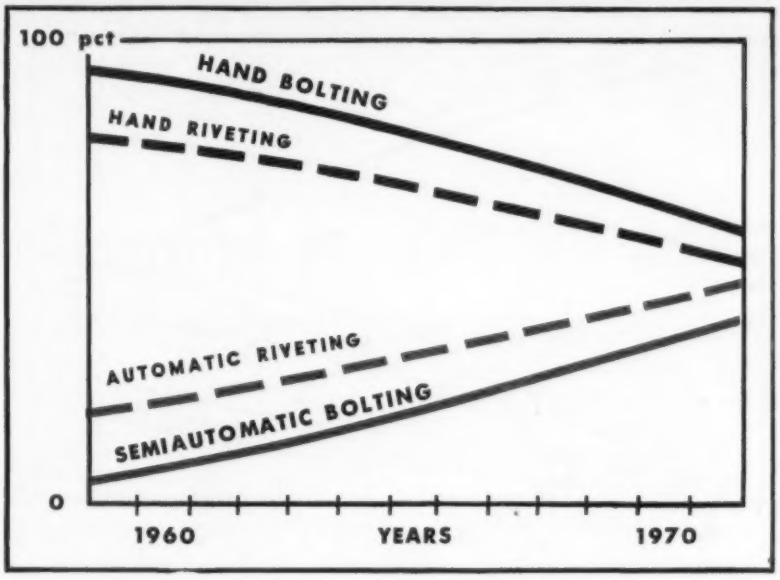
First, equipment will have to place the metal as close as possible to its final configuration. Then, the room-temperature properties of these materials dictate use of elevated forming temperatures.

Stress Precision—The rigidity of high-strength materials eliminates springing into place at time of assembly, yet gap tolerances and aerodynamic smoothness are even more important. Tooling materials that can take these elevated temperatures must be exploited to obtain needed precision.

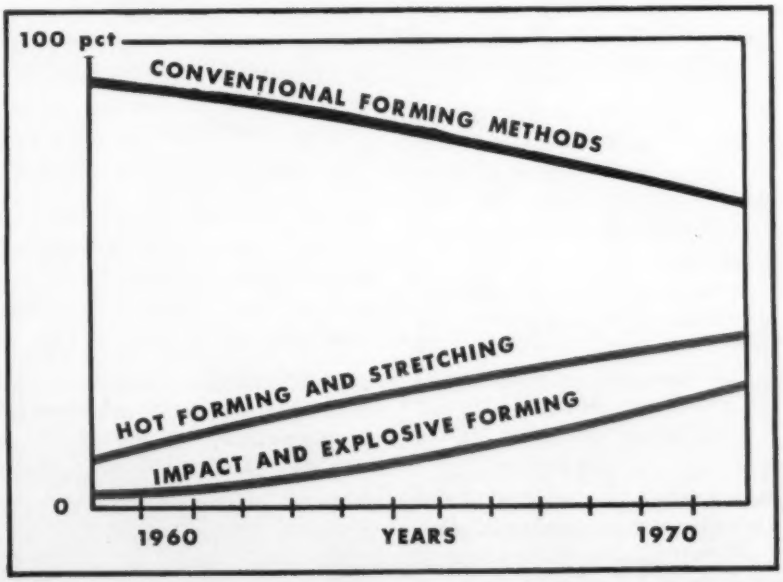
The following shaping methods will take the spotlight: precision casting, shear spin forming (both hot and cold), high-energy forming by shockwave and combined explosive and draw forming method, extruding and forging to close tolerances, and deep drawing.

Other areas requiring development include: hot forming equipment to take advantage of wide sheet material that can be used to reduce the number of final assembly joints in a structure; dies to with-

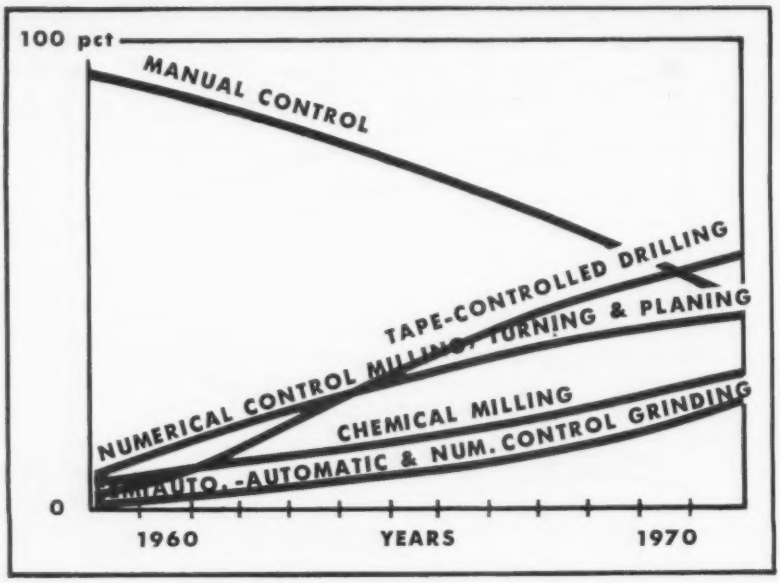
Automatic Fastening Gets Play



New Shaping Methods Gain



Trends in Materials Removal



stand 35,000 psi or higher during Guerin forming.

Many Developments Ahead—Other techniques to be considered are creep forming to operate at 1200° to 1500°F for 5 to 15 minute cycles; forming of materials immersed in heat-treating solutions; and the vacuum forming of sheet material at high-temperature, similar to present-day vacuum forming of plastics.

In the field of materials removal, operation will be performed at extremes of temperature. Materials and/or tools will be heated or at sub-zero temperatures.

Some metals and practically all of the ceramics and cermets cannot be machined with ordinary tools. They'll require ceramic tools, abrasive grinding, ultrasonic machining, or electrical discharge machining.

Required also will be general tightening of tooling accuracy. Further, tools will have to be far more rigid to work the high-strength materials predicted for use.

Advance Controls—Use of numerical control must be expanded to both machines and processes. Tracer-proximity control should be extended to control critical operations not suitable for programming.

Numerical control should be developed to minimize tooling. Programming techniques should simplify operation for low-cost use of numerical control equipment for prototype or limited quantity production.

Other areas requiring emphasis will include: chemical milling of high-strength materials to close tolerances and high surface finishes; grinding for high metal removal rates; and special application of ultrasonic and electrical discharge machining.

Metal Finishing Trends—Trends indicate considerable development in plating, coating and cladding. Nondetrimental plating or cladding processes should be developed to withstand 1200°F.

Operations should be combined with joining processes for secondary structures where temperature capabilities are compatible with those of the parent materials. Temporary protective coatings must be developed for materials that cannot be given permanent coatings until after fabrication, such as in the case of molybdenum.

Treat Large Parts—In the heat treating field, equipment must be able to handle annealing or heat treating large components above 2000°F in closely controlled atmospheres. Other new types of furnaces, which may have to handle entire airframe sections, will be required to cure organic sealants.

Within the next five years, heat treat methods for simultaneously heat treating, forming, tempering and stress relieving must be developed. Investigations of cryogenic effects in restoring ductility to weldments should be expanded.

High Temperature Wiring—Developments in the electrical field will include a gradual transition to numerically - controlled equipment. Within five years, equipment for fabricating wiring for service at 1200°F will be developed.

This could involve special units for bending high-strength insulating materials or metallic-sheathed, high-temperature insulated conductors.

Standards and facilities must be developed for testing in controlled environments in order to evaluate the effects of atmospheric substances, radiation damage, thermal conductivity, thermal expansion and strength at temperature.

Testing Problems — With pneumatic control systems to go to operating pressures as high as 100,000 psi, there'll be need for new types of pressure monitors and increased safety provisions during tests. High-altitude flight will also create a need for testing at very low pressure.

Entire test sequences will be recorded on tape for automatic testing. The trend is towards memory drums and storage devices that will be able to compare and make decisions with regard to accumulated tests data.

A break-through in the use of gravity or anti-gravity for propulsion will create a need for entirely new testing methods.

Reprints of this article are available as long as the supply lasts. Write Reader Service Dept., The IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.

WELDING CLINIC

J. Imperati and R. F. Pulver, Welding Engineers
The American Brass Company, Waterbury, Conn.

EVERDUR® ROD SPEEDS WELDING OF GALVANIZED STEEL

Arc welding is usually the most expedient means of reducing distortion, the major source of trouble in welding light-gage metal. However, metal-arc welding with covered electrodes adds more problems than it solves, due to difficult control and the need to remove slag and spatter from the product. Such difficulties are frequently encountered in steel sheet metal work.

In contrast, carbon-arc and inert-gas tungsten-arc welding offer easy control and eliminate slag and spatter. When these processes are used with a copper-alloy filler rod, such as Everdur-1010, control is greatly improved because Everdur's lower melting point produces bonding with only minimum melting of the steel. Increased welding speeds and the narrow heat-affected zones mean reduced distortion. Joint properties are adequate for all but the most exacting applications.

The narrow heat-affected zones make these processes attractive also for welding galvanized steel because they cause the least possible disruption of the protective zinc coating. With non-rusting copper-alloy welding rods they make the most dependable joints possible. So, Everdur-1010 has become a favorite filler metal for use with these processes in the fabrication of galvanized structural elements, ducts, and various types of container.

WELDING AIR-CONDITIONING DUCT SYSTEM FITTINGS at Carrier Corporation's plant in Philadelphia, using the carbon-arc process, with Everdur-1010 Welding Rod.

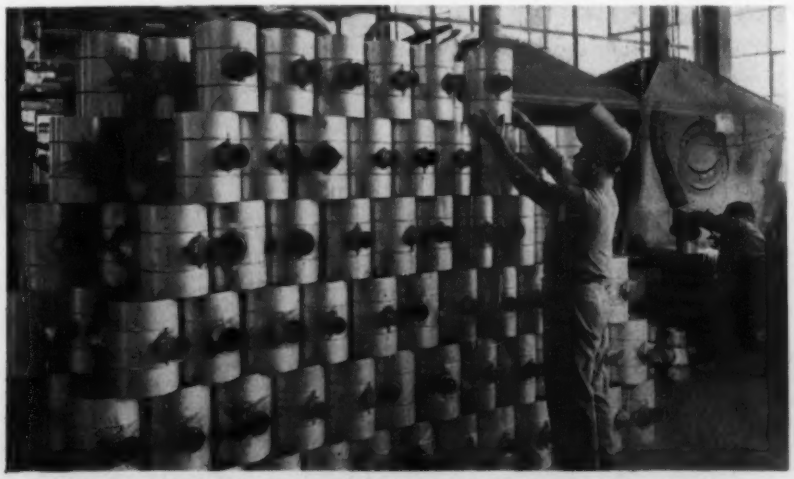
Carrier Corporation is one of the many concerns that utilize these advantages in their manufacturing operations. For many years, fittings and other components of their air-conditioning duct systems have been produced with ease and economy by welding with the carbon arc and Everdur-1010 Welding Rod.

Best results in welding either plain or galvanized steel require that only the least possible amount of steel be melted. To insure this it is necessary to avoid weaving so as to keep the arc always on the bronze weld metal. Arc lengths are kept as short as possible and current values set low enough to require welding speeds that can be handled with ease.

Joint types usually employed in sheet metal work—square butt, lapped, edge, and corner welds—are suitable for use with these processes.

Free Technical Service. If you have questions regarding the possible application of these processes to your job, Anaconda specialists will gladly help with suggestions. For such help or a copy of Publication B-13 write: The American Brass Company, Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ontario.

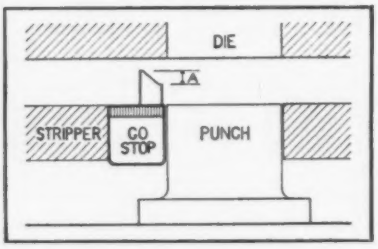
5980



ANOTHER VIEW OF AREA devoted to welding Carrier duct system components.

ANACONDA®
WELDING RODS
made by
The American Brass Company

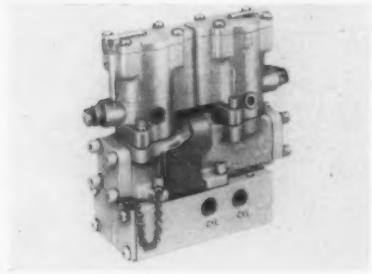
New Materials and Components



Automatic Stop Cuts Die-Construction Costs

A simple automatic stop for compound dies saves up to 90 pct mounting time. It's necessary only to drill one hole in the stripper and press it in. There's no layout for screws, drilling and tapping for spring parts, etc. Working in an oil bath for smoothness, it comes in one size for any material to 0.140 in. and any stripper thickness. (E. P. Johnson Rule Mfg. Co.)

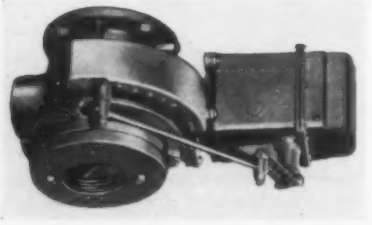
For more data circle No. 51 on postcard, p. 99



Plug-In Valves Are Fast to Install, Maintain

For 30- to 200-psi service, ¼-in., 4-way valves come with one-piece solenoid pilots for ac or dc, any voltage. Manual override, for machine setup, is optional. Built-in plugs and connectors throughout complete electrical connections as body and pilot are bolted into place, and cut installation and maintenance time and costs. All pneumatic or fluid connections are also made automatically. Compact, these valves afford extremely fast response, long life, and low cost. (Valvair Corp.)

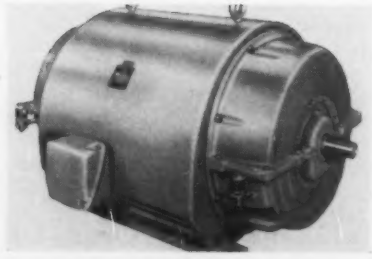
For more data circle No. 52 on postcard, p. 99



Air-Gas Valves Insure Proper Proportioning

Five sizes of air-gas proportioning valves economically control air and gas for proper blending under any firing condition. Absolute repeatability is assured in setting for any blend. These valves can be operated by a wide variety of either electric or air-operated automatic controls, and can be used to handle any industrial gas. (Eclipse Fuel Engineering Co.)

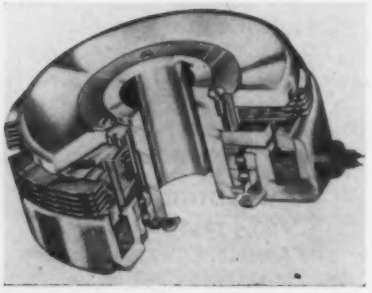
For more data circle No. 53 on postcard, p. 99



High-Hp Motors for Heavy-Duty Applications

Rating from 150 to 2000 hp at 1800 and 3600 rpm, a line of ac induction motors are for high-hp, constant-speed uses. They can operate pumps, fans, blowers, etc., or high-capacity machine tools, conveyors, punch presses, and other special machinery. Various bearing constructions come for different applications. Pressure lubrication is standard with 1000-hp models and over, and optional below. (The Louis Allis Co.)

For more data circle No. 54 on postcard, p. 99



Versatile Clutch for All Types of Operation

For automatic and semiautomatic machines, a wet-type clutch enables an almost unlimited variety of spindle speeds, feed and traverse movements, and direction changes. Compact design permits use of many in one machine. A simple magnetic principle of operation with annular flux through the plates provides high torque capacity and insures automatic wear takeup. Eight sizes from 3.3- to 11.5-in. diam offer a capacity range of ¼ to 34½ hp with torques of 14.5 to 1812 lb-ft. (Twin Disc Clutch Co.)

For more data circle No. 55 on postcard, p. 99

MATERIALS & FABRICATION PREVIEW

of the SOARING 60's

METAL SHOW

CHICAGO

International Amphitheatre, Nov. 2-6, 1959

Here is an atmosphere steeped in discovery of the future — a preview of the kind of metalworking magic and technical wizardry that will propel America into the soaring 60's. Inspiring exhibits and thought-provoking technical sessions will draw 50,000 men of metalworking into a dynamic conclave of progress-producing activity.

Plan NOW to attend—you'll come away with new ideas, better equipped for the challenge of competition in the 60's!

EXHIBITORS A FEW EXCELLENT SPACE LOCATIONS STILL OPEN—WRITE, WIRE OR CALL COLLECT FOR LIST OF AVAILABLE BOOTHS

NATIONAL METAL CONGRESS and EXPOSITION

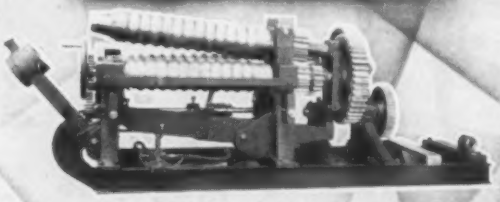
Sponsored by the AMERICAN SOCIETY FOR METALS

Metals Park • Novelty, Ohio

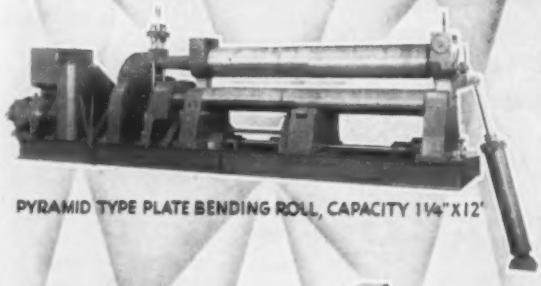
Cooperating Activities: The Metallurgical Society of AIME; Society for Non-destructive Testing, Inc. Associations presenting technical sessions in cooperation with ASM: Metal Powder Industries Federation; Metal Treating Institute; Ultrasonic Manufacturers' Association; Special Libraries Association—Metals Division; American Society for Testing Materials—Committee B-9; and the extensive programs of the American Society for Metals with the William Park Woodside Memorial Sessions, and ASM Metallurgical Seminar.

SHEET METAL and PLATE-WORKING MACHINES

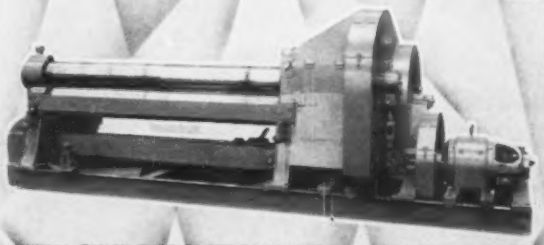
A complete line of heavy machinery for punching, shearing and bending sheet metal and heavy plates. . . .



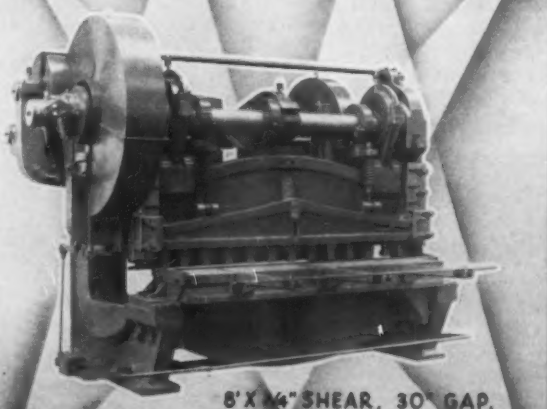
CORRUGATED CULVERT ROLL



PYRAMID TYPE PLATE BENDING ROLL, CAPACITY 1¼"X12'



INITIAL PINCH TYPE PLATE BENDING ROLL, CAPACITY ½"X8'



8'X¼" SHEAR, 30" GAP.

BERTSCH & COMPANY
CAMBRIDGE CITY INDIANA

C ELECTRIC FURNACE STEEL CASTINGS

are engineered to YOUR specific requirements

"C" steel castings are CLEAN steel castings of uniform structure that will minimize machining and assembly costs, permit of greater freedom and efficiency of design and add to your product the recognized strength, endurance and desirability of steel. C steel castings, foundry engineered from pattern to finished casting can be had in

CARBON, ALLOY OR STAINLESS STEEL SAND OR SHELL MOULDED

The technical experience and knowledge of our engineering staff are at your service. Write, phone, or call.

CRUCIBLE STEEL CASTING CO.
LANSDOWNE 1, PENNA.

GOSS and DE LEEUW

MULTIPLE SPINDLE
CHUCKING MACHINES
Tool Rotating
GOSS & DE LEEUW MACHINE CO., KENSINGTON, CONN.

HOT DIP GALVANIZING

JOSEPH P. CATTIE & BROTHERS, INC.
2520 East Hagert St.
Phone: Re 9-8911 Phila. 25, Pa.

POOLE
FLEXIBLE COUPLINGS
ALL SIZES AND TYPES
CATALOG ON REQUEST
POOLE FOUNDRY & MACHINE CO.
1700 UNION AVE., BALTIMORE 11, MD.

IF IT'S ACTION YOU'RE AFTER . . .

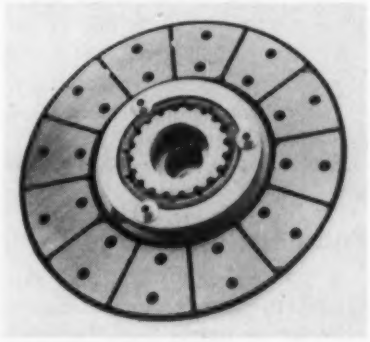
Advertise in The IRON AGE. Purchase-Decision executives in metalworking watch The IRON AGE advertising pages every week.

Chemical Polishing

A chemical polishing process levels and brightens the surface of aluminum silicon castings in 10 to 90 seconds at room temperatures. It is very useful before anodizing, electroplating, conversion-coating, wheel- or barrel-finishing, or even just used as is. (Alchemize Corp.)
For more data circle No. 56 on postcard, p. 99

Spline Drive Armatures

Spline drive armatures in diameters of 8, 10, 12, and 15 in. are for use on integral-horsepower electric clutch coupling and brake applications where shock-loading or vibration loading are problems. No mounting adjustment is required. The armature is pressed tight against the magnet face at the completion of mounting and on release the airgap is set automatically by an airgap spring. Automatic wear compensation is featured. Typical uses are on shears, punch presses, compressors, pumps, and similar equipment where high cycle rates and heavy loads are considered normal. (Warner Electric Brake & Clutch Co.)



For more data circle No. 57 on postcard, p. 99

Medium-Volt Starters

A redesigned medium-voltage ac motor starter has applications in metal-rolling and processing, on motors driving production equipment such as rolling mills. Other uses are on motor-generator sets and lighting transformers. It provides short-circuit protection and coordinated control for squirrel-cage, synchronous, and wound-rotor motors up to 3000 hp rated from 2300 to 4600 v. It is designed for severe operating conditions and repetitive duty requiring minimum maintenance. (General Electric Co.)
For more data circle No. 58 on postcard, p. 99

Magnet Material

Alnico VII A, a new permanent-magnet material with an energy value of 2.8 million oriented, is available for magnetic-core meter and instrument applications. It resists demagnetization even when subjected to high environmental heat. (The Indiana Steel Products Co.)
For more data circle No. 59 on postcard, p. 99

Delrin

The availability to industry of Delrin sheets, rods, and tubes has been announced by a manufacturer. It will be priced about the same as nylon. (Cadillac Plastic & Chemical Co.)
For more data circle No. 60 on postcard, p. 99

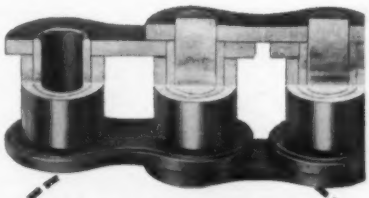
Threading Oils

Two new types of thread-cutting oils have been introduced by a company after tests showing them best suited for use with its line of pipe machines. Dark and clear, they prolong chaser life, are excellent coolants, and permit sharp and accurate threads without excess smoke. (Toledo Pipe Threading Machine Co.)
For more data circle No. 61 on postcard, p. 99

Titanium Alloy

A new titanium alloy with superior strength, ductility, and toughness is composed of the following percentages: 6 Al, 6 V, 2 Sn, 0.5 Fe, 0.25 Cu, balance Ti. Weighing from 20 to 40 pct less than high-strength steels, it has exhibited 200,000-psi tensile strength in tests. Many major titanium producers have shown "keen interest" in the alloy, and are supplying it to the armed forces for ordnance uses. It was developed in NYU's College of Engineering. (New York University, Office of Information Services)
For more data circle No. 62 on postcard, p. 99

MAXIMUM
WEARING SURFACES
for longer chain life



ACME'S SECRET
for years of additional service

Special hardening of pins, bushings and rollers help insure maximum life expectancy of ACME Roller Chains. All parts subjective to articulation have glass-hard wear-resistant surfaces to render eminent life expectancy. The side plates or links which act as connecting members for articulating parts are specially heat treated and tempered to insure great strength and ductility.

Maximum hardening of all wearing surfaces on ACME Chains is conducive to longer life, resulting in greater economy and lower maintenance cost.

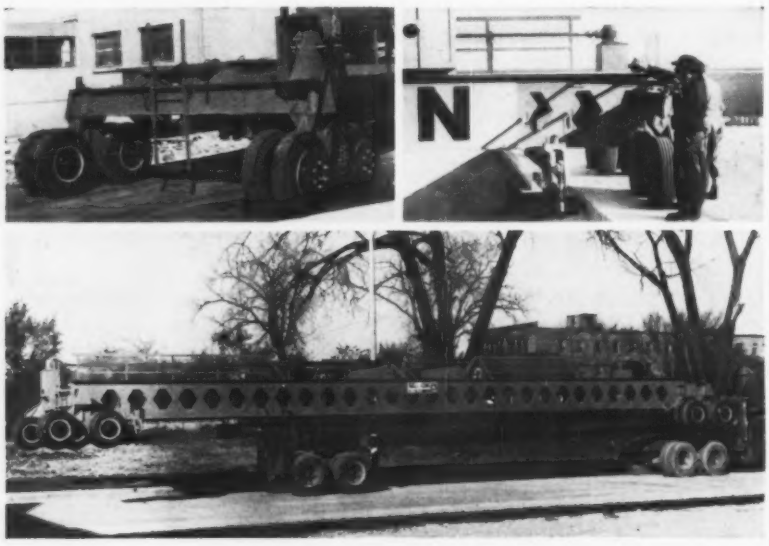
Your local distributor has a complete line of ACME Chains and Accessories on hand for immediate delivery. Call him.

Write Dept. 21-G for new 100-page Illustrated Catalog, including new engineering section showing diagrams of 36 methods of chain driving.

Acme Chain Corporation
HOLYOKE MASSACHUSETTS

New Catalogues and Bulletins

Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, p. 99.



ABELL-HOWE CUTS THE HIGH COST OF SPECIAL CRANES FOR SPECIAL SERVICE

Here's a one-of-a-kind crane built by Abell-Howe for George D. Hardin, Inc., Chicago contractor, who constructed a big water filtration plant on the windy city's north side. Rated at 15 tons capacity, the heavy duty rubber-tired crane loads, lifts and spreads sand and gravel and also positions heavy precast concrete water troughs. This, of course, is only one of the many kinds of special cranes Abell-Howe builds for special jobs. Even Uncle Sam enlists Abell-Howe to build special cranes for defense installations.

All of this experience in meeting individual crane problems is yours to benefit from. No matter what your particular crane need may be, Abell-Howe can build it for you best — and save you money in the process.

ASK FOR YOUR ABELL-HOWE CRANE BROCHURE

ABELL-HOWE COMPANY
7765 VAN BUREN ST., FOREST PARK, ILLINOIS

Drill-Point Grinder

A folder covers features of a new production drill-point grinder capable of grinding drill points at high speeds and to close tolerances. It features the ability to grind split and heli-centric (spiral) points. (Morse Twist Drill and Machine Co.)

For free copy circle No. 1 on postcard, p. 99

Forklift Trucks

A brochure explains features of a power-shifted, dual-range transmission available on a line of lift trucks from 6000 to 12,000-lb capacity. Operation, serviceability, and safety and design features are covered. (Hyster Co.)

For free copy circle No. 2 on postcard, p. 99

Pneumatic Fittings

A catalog illustrates and describes an expanded line of accessories for air-supply lines. Included are sockets, plugs, hose clamps, fittings, and tools—all interchangeable with most standard makes. (Lincoln Engineering Co.)

For free copy circle No. 3 on postcard, p. 99

Tubing Cuts Costs

A folder shows how the use of tubing instead of bar stock cuts the cost of producing hollow precision parts, particularly where alloy steel is involved. (The Babcock & Wilcox Co.)

For free copy circle No. 4 on postcard, p. 99

OBI Presses

A 12-page bulletin describes a line of general-purpose open-back-inclinable mechanical-gap presses available in 75, 110, 150, and 200-ton capacities. Two different series have the air-operated friction clutch mounted on the back shaft and the

Now! Tests prove

CONTOUR-WELDED* STAINLESS TUBING

gives products better protection against contamination

This tubing is smoother inside – so there's less danger of product incrustation. And this means better protection against contamination. Not only that, a smoother surface also ensures greater resistance to corrosion and longer fatigue life.

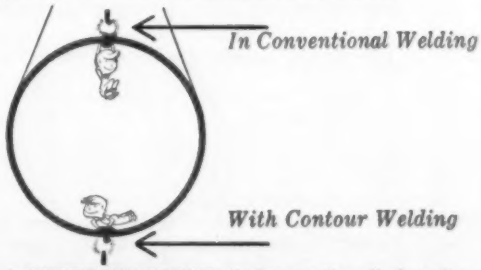
Here's why TRENTWELD® tubing, made by the exclusive *Contour-Weld* process, is smoother than any other tubing:

First, it's smoother than seamless tubing because it's formed from uniformly rolled strip steel, whereas seamless is extruded or pierced.

Second, it's smoother than other welded tubing because the Trent-patented *Contour-Weld* process virtually eliminates the weld bead.

But get full details on why smoother tubing surfaces are vital. Send for the free 48-page "Trentweld Manual." It contains complete data on *Contour-Welded* tubing in stainless and high alloy steels, titanium, zirconium, zircalloy and Hastelloy†, in sizes from ⅛" to 40" O.D. Write: Trent Tube Company, Box 2518, Pittsburgh, Pa.

†Trademark Haynes Stellite Co.



In CONVENTIONAL WELDING of tubes, gravity pulls the molten metal down to form a bead that is difficult to remove by cold working. And cold working may lead to undercuts, focal points for fatigue cracks and corrosive attacks. Cleaning becomes difficult.

*With CONTOUR-WELDING the tube is welded at the bottom. Gravity still pulls the molten metal down inside the tube, but now the weld area corresponds to the contour of the tube. There's virtually no weld bulge on the inside surface. And even on the O.D., the weld seam more closely conforms to the contour of the tubing.

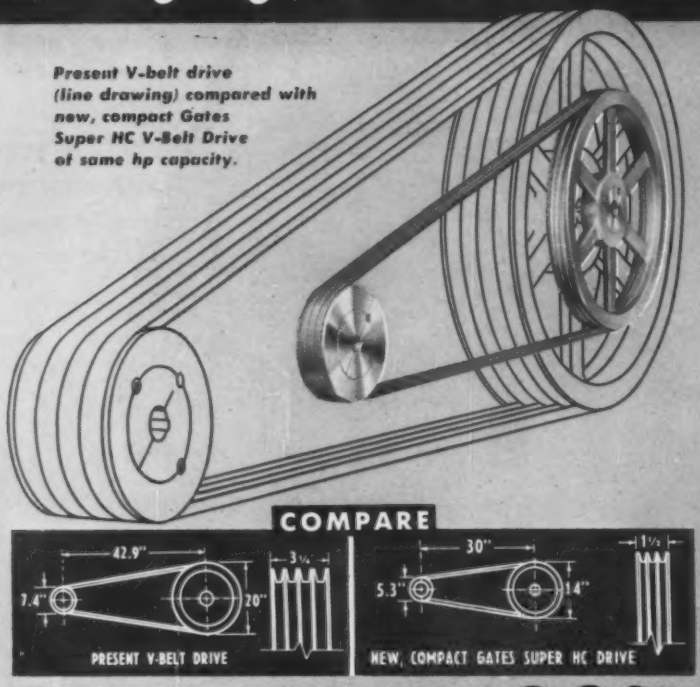
CONTOUR TRENTWELD®

stainless and high alloy pipe and tubing

TRENT TUBE COMPANY

Subsidiary of Crucible Steel Company of America • GENERAL OFFICES: East Troy, Wisc. • MILLS: East Troy, Wisc.; Fullerton, Calif.

Designing NEW DRIVES?



Save up to 20%

with new high capacity V-belt drive

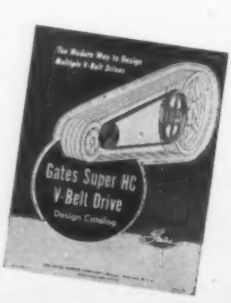
When you change the whole drive — both V-belts and sheaves — remember: The cost of a Gates Super HC V-Belt Drive is as much as 20% less than the cost of present V-belt drives of the same horsepower capacity.

A development of Specialized Research in the world's largest V-belt laboratories at Gates, the new Super HC V-Belt makes possible the most compact, lightest-weight, lowest-cost multiple V-belt drive you can put on any machine!

Cuts drive space as much as 50%

With Gates new Super HC V-Belt, sheave diameters and widths can be reduced 30% to 50%, center distances 20% and more. Bearing load is lightened and total space occupied by the drive may be cut as much as 50%.

"The Modern Way to Design Multiple V-Belt Drives" is an informative handbook on the Super HC Drive, available from your nearby Gates Distributor listed in the Yellow Pages of your phone book.



The Gates Rubber Co., Denver, Colorado
Gates Rubber of Canada Ltd., Brantford, Ont.
World's Largest Maker of V-Belts

TPA 439

Gates SUPER HC V-BELT Drives

FREE LITERATURE

crankshaft, respectively. (The Oliver Corp., A. B. Farquhar Div.)
For free copy circle No. 5 on postcard, p. 99

Motor Drives

A 96-page catalog illustrates and describes a wide line of mechanical variable-speed motor drives, available in capacities from ¼ to 40 hp, with infinitely adjustable speeds from 2:1 to 10:1, from a constant-rpm motor source. A variety of configurations are included. (Write on letterhead to Reeves Pulley Div., Reliance Electric and Engineering Co.)

Cold-Heading Wire

Outlined in a bulletin are the advantages of an extruded cold-heading wire (cartridge brass, 70 pct) produced from billets made by a continuous casting process. The product has good uniformity. (Scovill Mfg. Co.)
For free copy circle No. 6 on postcard, p. 99

How to Weld "T-1"

A company offers a booklet on how to weld its "T-1" steel. A circular calculator is included which is used to determine correct heat amounts as related to amps, volts, and speed of the welding arc, and which is designed to be used by welders on the job. (United States Steel Corp.)
For free copy circle No. 7 on postcard, p. 99

Grinding-Wheel Guide

A 57-page Specifications Catalog includes over 1600 experience-tested abrasive-wheel recommendations for grinding everything from agate to zirconium. Material, work, and operation are related in table form to recommended abrasive, grit, grade, and bond, from a complete line of grinding wheels. (The Carborundum Co.)
For free copy circle No. 8 on postcard, p. 99

Seam Welders

An illustrated brochure covers a new line of resistance seam weld-

ers ranging in capacity from 50 to 400 kva. (The Federal Machine and Welder Co.)

For free copy circle No. 9 on postcard, p. 99

Quick-Change Toolpost

Described in complete detail in a six-page brochure, the Boni Master Multi-Tool Holder (Swiss) is designed to improve on standard lathe square turrets. It incorporates three tool stations and uses a variety of "exchange holders" to permit fast tool changing for tool grinding, or for different operations. Accuracy of both tool positioning and indexing is guaranteed to 0.0001 in. It accommodates all standard cutting tools, including a large range of boring-bar sizes. (Karl A. Neise)

For free copy circle No. 10 on postcard, p. 99

Steel Castings

"Steel Castings—Carbon and Low Alloy" is a brochure giving complete data on the properties of the various alloys most commonly used for steel castings. A wide variety of applications are illustrated. (Strong Steel Foundry Co.)

For free copy circle No. 11 on postcard, p. 99

Industrial Fans

A 28-page bulletin details capacities and construction of a line of industrial fans. Complete rating tables are included. (Lehigh Fan & Blower Div. of Fuller Co.)

For free copy circle No. 12 on postcard, p. 99

Research Furnace

A catalog sheet describes a high-temperature resistance furnace for use in materials research and development. It is designed for operation to 4,800°F, intermittent to 5,100°F. (Curtiss-Wright Corp.)

For free copy circle No. 13 on postcard, p. 99

Container Handling

An illustrated brochure describes a cargo-container handling system offering complete standardization to all carriers and shippers. (National Malleable and Steel Castings Co.)

For free copy circle No. 14 on postcard, p. 99

Need REPLACEMENT V-BELTS?

Improved Gates Vulco Rope gives you 2 important advantages

1. 40% higher hp rating at no increase in price: This important cost-saving advance is the result of Specialized Research in the world's largest belt-testing laboratories at Gates. **As replacements on standard drives these V-belts with 40% more load-carrying ability give longer service life...reduce down-time, cut belt replacement costs.**

2. Concave Sides (U. S. Pat. 1813698): The sides of Gates Belts are concave (Fig. 1). When the belt is bent around the sheave, the concave sides fill out—become straight—for full, uniform contact with the sides of the sheave groove (Fig. 2). Uniform contact insures maximum pulling power...even distribution of wear...longer life.

Available in all sizes from your nearby Gates V-Belt Distributor listed in the Yellow Pages of your phone book.

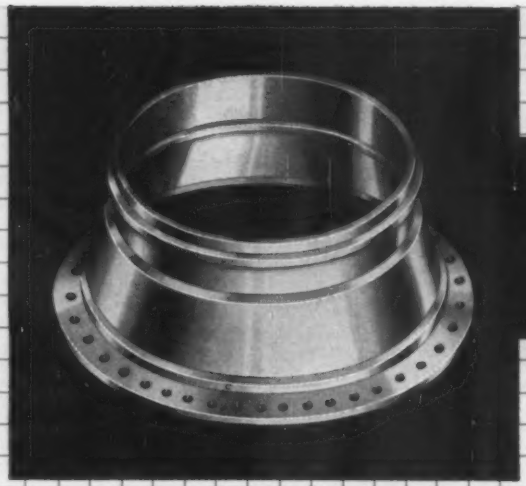
When designing new drives
use Gates new Super HC V-Belts and Sheaves.
See opposite page.

The Gates Rubber Co., Denver, Colorado
Gates Rubber of Canada Ltd., Brantford, Ont.

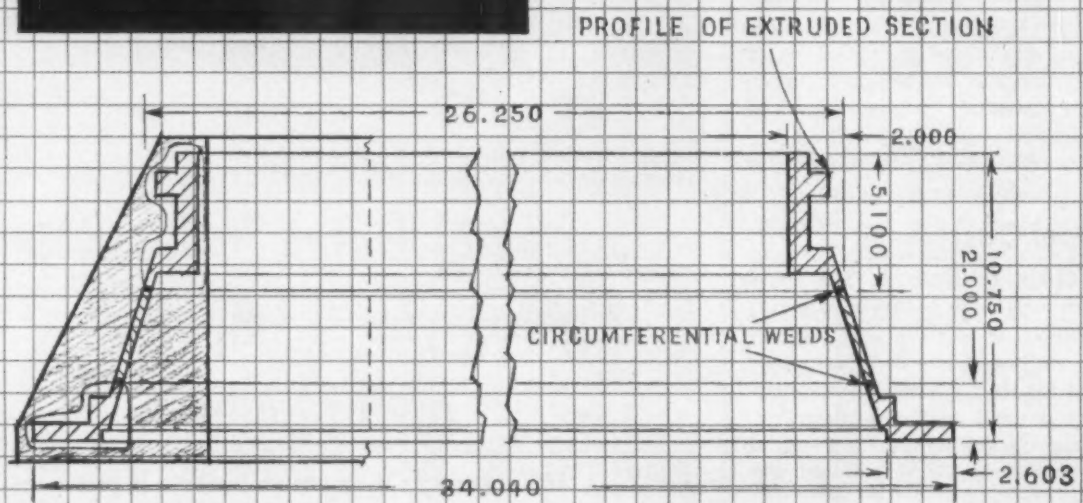
World's Largest Maker of V-Belts

TPA 432

Gates Hi-Power VULCO ROPE V-Belts



Saved 862 lbs. of A-286
Saved $3530.00



AS FORMERLY PRODUCED, WOULD REQUIRE 1091 LBS. OF A-286

USING FLASH BUTT-WELDED RINGS REQUIRE ONLY 229 LBS. OF MATERIAL

Flash Butt-Welded Rings Reduce Excess Stock
SAVE $3530.00 each on Shroud Nozzle Support in Pilot Run

Where expensive metals are involved, dramatic savings are often accomplished by combining several flash butt-welded rings into a single complicated assembly. In addition to the pounds of material saved, hours of costly machining required to remove this excess metal are eliminated.

With experience and know-how gained from working high-strength, high-temperature alloys, Amweld engineers and metallurgists frequently suggest fabricating techniques to solve tricky problems—and reduce manufacturing costs.

Amweld's extensive know-how in welding, forming, and machining of welded products and assemblies is available to you. Write or call today. We will be glad to study your problem and to provide subcontracting service on prototype or production orders.

GET THE FACTS ABOUT AMERICAN WELDING

Complete information. Facilities brochure, Precision Assemblies Catalog, and booklet on "How Flash Butt-Welded Rings are Made."

THE AMERICAN WELDING & MFG. CO. • 120 DIETZ ROAD • WARREN, OHIO

AMERICAN WELDING

FREE LITERATURE

Continued

These publications describe money-saving equipment and services . . . they are free with no obligation . . . just circle the number and mail the postcard.

Self-Locking Nut

A four-page bulletin describes a flush-setting, self-locking, self-clinching nut for sheet-metal fastening operations. Special design permits reuse without any damage to its self-locking effectiveness. These locknuts are made in steel, stainless, and aluminum alloy, in thread sizes 4-40, 6-32, 8-32, and 10-32. (Penn Engineering & Mfg. Co.)

For free copy circle No. 21 on postcard

Temperature Crayons

Temperature detection is easy and economical with a line of temperature-sensitive paints and crayons. They are described in literature. (Curtiss-Wright Corp., Princeton Div.)

For free copy circle No. 22 on postcard

Balancing Instrument

Literature is available on a calibrating and weighing system balancing instrument, redesigned for improved performance and stability. A miniature cam, spring-loaded for positive adjustment, replaces a potentiometer as the zero-adjustment device. The instrument operates at 110 v. (Morehouse Machine Co.)

For free copy circle No. 23 on postcard

Free-Piston Pump

A four-page folder describes a new air-operated pump that handles anything that flows, from molten metals to ice cream. It continues to operate while partially disassembled for cleaning or maintenance. Flow is absolutely smooth and air-free; pulsating and surging are totally absent. It can be manufactured in various capacities and for special purposes. (The Crossley Machine Co.)

For free copy circle No. 24 on postcard

Duplex Cold Saw

A heavy-duty duplex cold saw to speed the accurate cutting of large alloy steel rounds, squares, and slabs is described in a data sheet. Two saw carriages have their blades opposing each other in the same plane and cut simultaneously from both sides of the stock. (Albert Klingelhofer Machine Tool Corp.)

For free copy circle No. 25 on postcard

Barrel Finishing

A four-page bulletin contains details and specifications of a complete line of separating equipment for barrel finishing operations. Magnetic and mechanical types of separators, and various sizes of separating screens are included. (Techline Div., Wheelabrator Corp.)

For free copy circle No. 26 on postcard

Chemical Products

A bulletin gives descriptions, data, uses, and shipping information on a complete line of industrial chemicals. (Hooker Chemical Corp.)

For free copy circle No. 27 on postcard

Acid Inhibitor

A completely odorless acid inhibitor is described in literature. It is a liquid added in small amounts to acid pickling solutions to prevent attack of steel and copper. Used 1 part to 500 parts of pickling solution, it has high inhibiting action in cold or hot solutions of sulphuric, muriatic, phosphoric, hydrofluoric, and other non-oxidizing acids. (Ethone Inc.)

For free copy circle No. 28 on postcard

Material Handling

Vol. LVII. No. 1, of "Lift and Hoist" describes the author company's $2-million product-develop-

Postcard valid 8 weeks only. After that use own letterhead fully describing item wanted. **10/1/59**

Circle numbers for Free Technical Literature, Design Digest, or New Equipment:

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90

If you want more details on products advertised in this issue fill in below:

Page ..... Product .....

Page ..... Product .....

Page ..... Product .....

INVALID WITHOUT COMPANY NAME—TYPE OR PRINT

Name .....

Title .....

Product Manufactured .....

Company .....

Co. Address .....

.....

City ..... Zone .... State .....

FIRST CLASS
PERMIT No. 36
NEW YORK, N. Y.

BUSINESS REPLY CARD
No postage necessary if mailed in the United States

POSTAGE WILL BE PAID BY

THE IRON AGE
Post Office Box 77, Village Station
NEW YORK 14, N. Y.

FREE LITERATURE

ment program in the material-handling field. (The Yale & Towne Mfg. Co.)

For free copy circle No. 29 on postcard

Circuit Breakers

A 12-page bulletin describes a complete line of industrial molded-case circuit-breaker accessories and modifications. It provides full selection information, and all products are fully illustrated and specified. (General Electric Co.)

For free copy circle No. 30 on postcard

Forklift Truck

A four-page brochure describes a gas-powered, pneumatic-tire forklift truck of 2000-lb capacity, designed for handling over rough floors in congested areas. (Clark Equipment Co.)

For free copy circle No. 31 on postcard

Press Brakes

A four-page bulletin describes two light-duty models of mechanical press brakes. Their operating features and accessories are illustrated in detail, and complete specifications are given. They have 11- and 25-ton capacities, respectively. (Dreis & Krump Mfg. Co.)

For free copy circle No. 32 on postcard

Optical Measure

An illustrated data sheet describes features and applications of an optical measuring system available as original or additional equipment on the manufacturer's line of horizontal boring, milling, and drilling machines, both table and floor type. It is an optical projection device providing an accurate and fast means of reading the vernier scales for vertical and horizontal movements. (The Cincinnati Gilbert Machine Tool Co.)

For free copy circle No. 33 on postcard

Welding in Design

"Design Ideas No. 23" discusses the basic objectives of a new lathe development and the reasons a welded-steel design is used. It shows another example of the freedom of design possible with welded steel. Resulting rigidity and reduced construction costs are stressed. (The Lincoln Electric Co.)

For free copy circle No. 34 on postcard

Paper Tape Reader

A six-page folder outlines the features and applications of a bi-directional paper tape reader. Reading up to 60 characters per second in either direction, it is instantly reversible. Low in cost, it is designed for all types of data-handling operations. (Tally Register Corp.)

For free copy circle No. 35 on postcard

Face Shields

A bulletin covers a complete line of face shields. Featured is the newest addition to the line—a shield with a clear acetate window for unobstructed vision and mesh screen elsewhere for good ventilation. (American Optical Co.)

For free copy circle No. 36 on postcard

Stop Clocks

Bulletins describe a new line of advance-design digital ac and dc stop clocks which are extremely accurate in measuring time intervals over wide voltage and ambient temperature variations. The ac clocks may be used for 60- and 400-cps operations. The dc clocks are used for 20- to 30-v dc operation. Electrical reset permits local or remote control or automatic operation where successive time intervals must be measured. Digital readout allows rapid, accurate reading of the indicated time. These clocks are ideal for controlling various process functions, and many other uses. (The A. W. Haydon Co.)

For free copy circle No. 37 on postcard

Machine Mounts

Literature describes and illustrates machine mounts for vibration control and shock protection. (Consolidated Kinetics Corp.)

For free copy circle No. 38 on postcard

BUSINESS REPLY CARD

No postage necessary if mailed in the United States

FIRST CLASS
PERMIT No. 36
NEW YORK, N. Y.

POSTAGE WILL BE PAID BY

THE IRON AGE

Post Office Box 77, Village Station

NEW YORK 14, N. Y.

Postcard valid 8 weeks only. After that use own letterhead fully describing item wanted. 10/1/59

Circle numbers for Free Technical Literature, Design Digest, or New Equipment:

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90

If you want more details on products advertised in this issue fill in below:

Page ..... Product .....

Page ..... Product .....

Page ..... Product .....

INVALID WITHOUT COMPANY NAME—TYPE OR PRINT

Name .....

Title .....

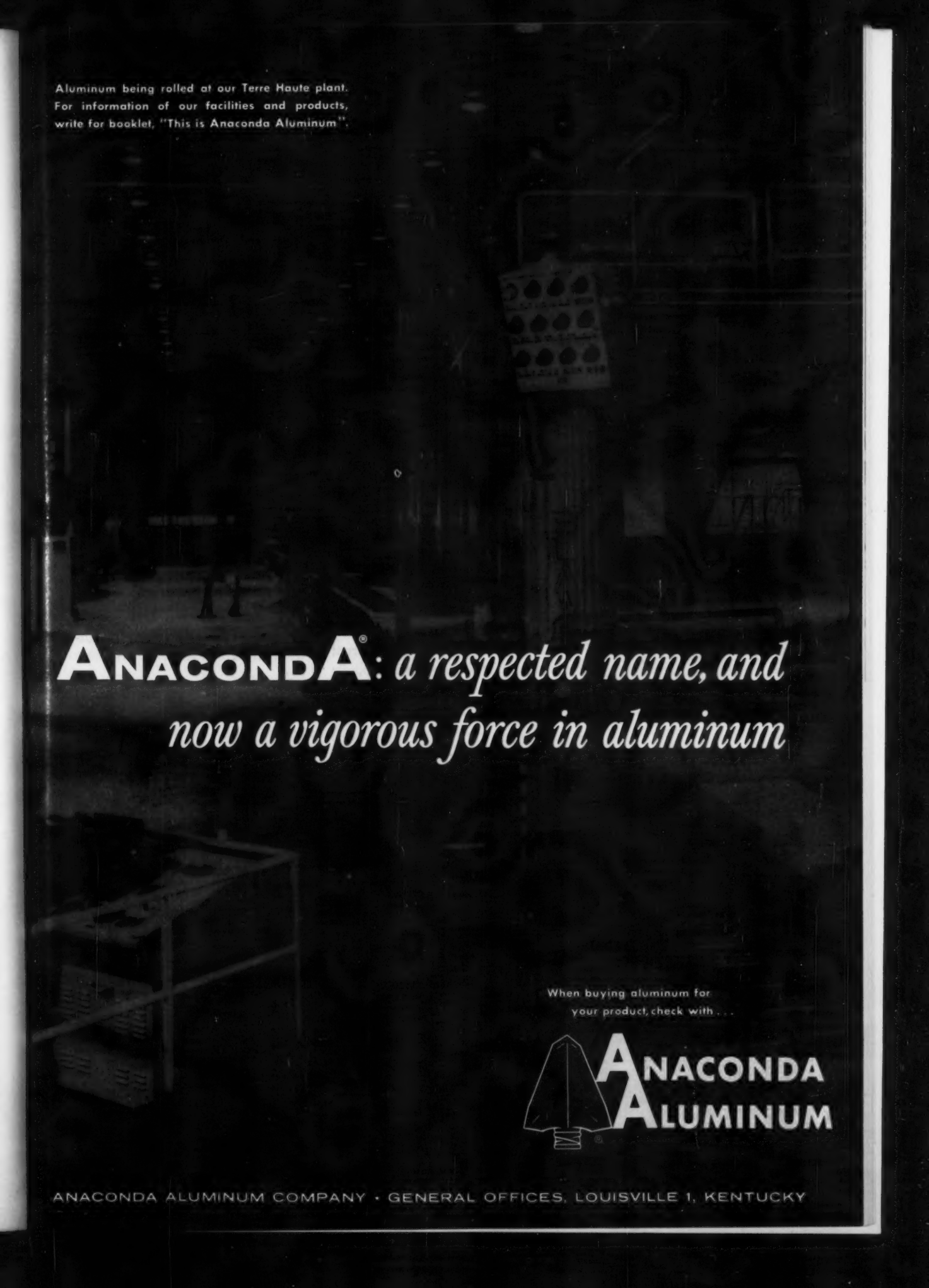
Product Manufactured .....

Company .....

Co. Address .....

.....

City ..... Zone .... State .....



Aluminum being rolled at our Terre Haute plant. For information of our facilities and products, write for booklet, "This is Anaconda Aluminum".

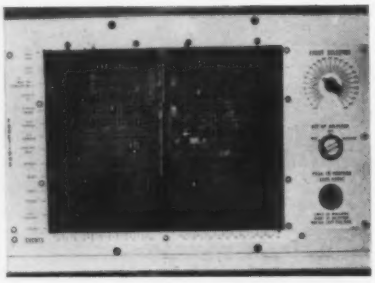
ANACONDA®: *a respected name, and now a vigorous force in aluminum*

When buying aluminum for your product, check with . . .

ANACONDA ALUMINUM

ANACONDA ALUMINUM COMPANY · GENERAL OFFICES, LOUISVILLE 1, KENTUCKY

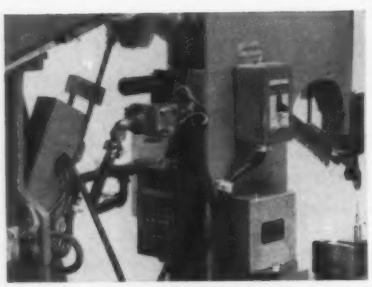
New Equipment and Machinery



Pegboard Controls Automatic Milling Machine

A simple pegboard is the control panel for an automatic milling machine. It controls all machine functions or movements, and provides for auxiliary operations such as fixture clamping or indexing. For each function, a 24-hole row allows the operator to peg in cycles of up to 24 steps or events. Setups are made by putting pegs in holes opposite the desired function in proper sequence. All machine functions can be programmed, including tracer control. (Cincinnati Milling Machine Co.)

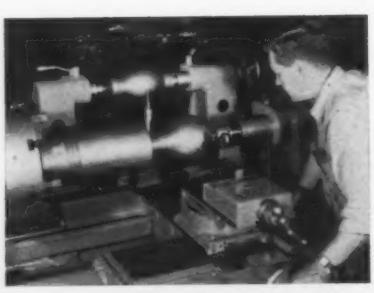
For more data circle No. 71 on postcard, p. 99



Pneumatic Riveter Has Blade Hopper Feed

The blade hopper of a pneumatic riveter enables feed of long tubular rivets, collar studs, and threaded or knurled parts. It can be continuously cycled or operated intermittently. Narrow machine front area permits single- or multi-spindle setups. The setting tool is driven pneumatically through toggle linkage. The riveter can be used with fixed-position setting tools, in-line slide fixtures, or rotary tables. Rivets to ⅛-in. diam can be handled. (Milford Rivet & Machine Co.)

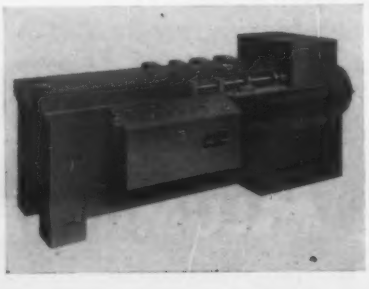
For more data circle No. 72 on postcard, p. 99



90° Lathe Tracer Is Rugged and Accurate

Built in various sizes for use on a company's heavy-duty and standard lathes, a 90° hydraulic tracer will work from flat or full-round templates. When it is operating, the cross-slide screw is locked out to prevent wear, and motion is direct from tracer cylinder to tool via a solid steel bar. Fast, the tracer can rapid in and out 80 ipm and feed up to 45 ipm. It resists cutting-tool pressures of 6000 lb, yet is accurate to 0.001 in. on diameter and shoulder length. (R. K. LeBlond Machine Tool Co.)

For more data circle No. 73 on postcard, p. 99



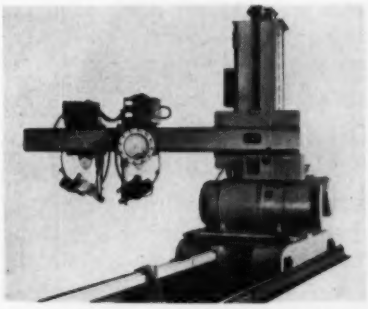
Automatic Saw Cuts Aluminum and Brass Shapes

A fully automatic circular saw is designed for high-production cutting of aluminum and brass extrusions, bar stock, and tubing. Capacity is 4 x 4 in. It can be set up to feed automatically by holes or other forms stamped into the materials. Cycling from 1 to 20 times per minute, it has a speed relative to the length of projection and the material being cut. A 5-hp motor drives the 16-in. blade 7000 rpm. Conveyor tables and various hydraulics come as accessories. (W. F. Wells & Sons)

For more data circle No. 74 on postcard, p. 99

Mechanized Weld Head

A mechanized welding-head manipulator facilitates automatic welding of all sizes and shapes. It is also suited to fillet welding of various structural fabrications. It fea-



tures simultaneous boom, carriage-column, and base travel, and can be furnished with either single or dual heads for floating or fixed operations. (World Electric Co.)

For more data circle No. 75 on postcard, p. 99

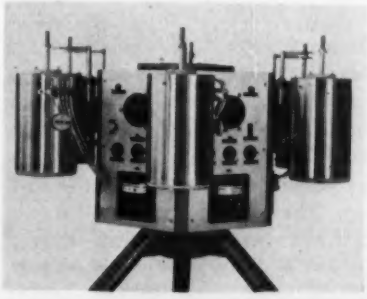
Automatic Assembly

Air-powered automatic assembly machines secure nuts, bolts, and screws to desired torques, either in groups or in series. Custom-designed for specific jobs, they can be built to fit almost any fastener pattern and stall torque. Some units are adjustable to handle more than one bolt pattern. (Ingersoll-Rand Co.)

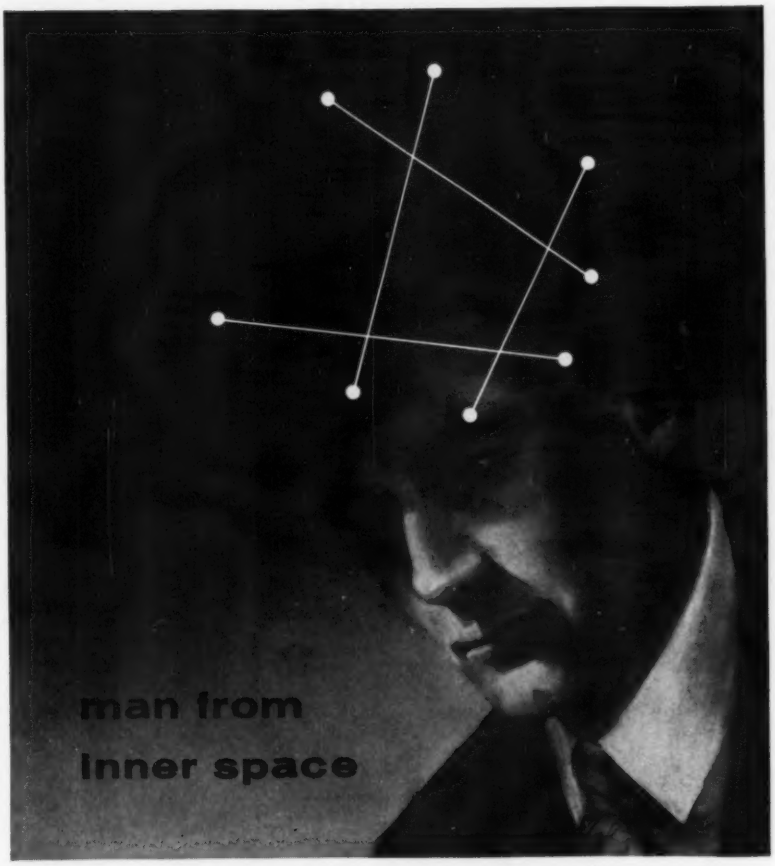
For more data circle No. 76 on postcard, p. 99

Hot Tensile Tester

A multi-station rotary jig for hot tensile testing saves considerable time in use with any universal tensile testing machine. It comes with



2, 4, 6, or 8 stations, each station consisting of a furnace, control system, and quick-connecting pull rods. Previously, test specimens were heated prior to test in the



Outer space has its problems and its specialists. But for those concerned with moving things through the *inner* reaches of a plant or factory, there is no better source than "The Man from Logan."

As your field engineer for Logan Conveyors, he must qualify with a strong academic background, years of home-office and field engineering work, and a good command of Logan's two generations of experience as a leading conveyor company.

In addition to these personal qualifications, "The Man from Logan" calls on any assistance needed from a progressive research and development staff and an eminently qualified home-office engineering force. And, of course, Logan's resources of materials and components are unsurpassed in the industry.

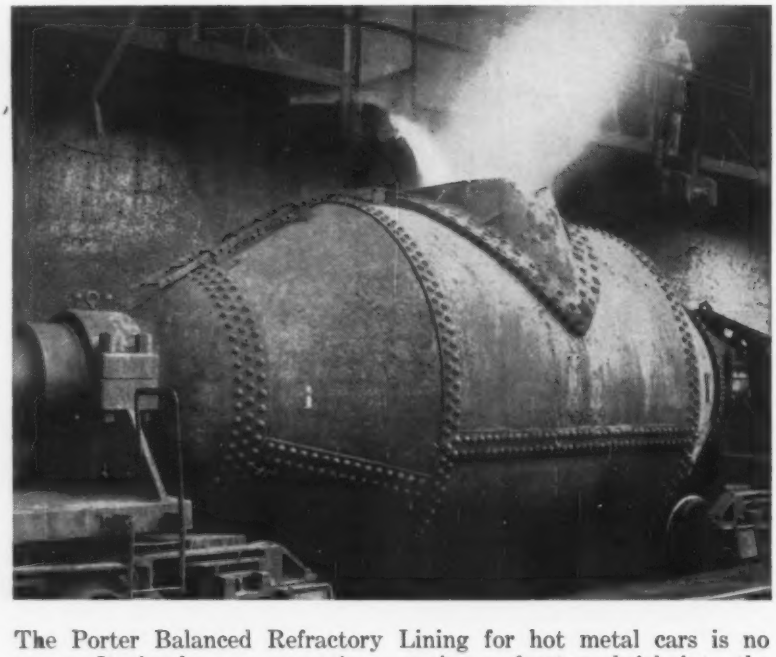
To you, then, "The Man from Logan," comes as the convenient and completely dependable source for the one best custom-designed conveyor system for any need. You need only to call him in. His broad experience further assures you that costs will be kept as low as is feasible. Write or phone today for a visit from "The Man from Logan."

Logan Conveyors

LOGAN CO., 545 CABEL ST., LOUISVILLE 6, KY.

TORPEDO LADLE LININGS:

a **Porter Balanced Lining**—gives extra tonnage...lower lining costs...less down time



The Porter Balanced Refractory Lining for hot metal cars is no secret. It simply means putting premium refractory brick into the *key* sections of a ladle lining . . . *only where it's really needed!*

A major Eastern mill recently made the change: going from an all high-fired, super-duty, clay brick lining to a balanced lining in their 150 Ton "Torpedo" ladles. They put Porter "SHAMVA" Mullite into the "tough spots", such as metal line, spouts and belt section of the "belly".

HERE ARE THE COST-SAVING, HIGH-TONNAGE RESULTS:

Porter "Balanced" Lining	All Super-Duty, High-Fired Clay Lining
Tonnage...120,000	Tonnage...72,000

Find out, now, how "SHAMVA" Mullite and "SHAMVA-D" refractories can produce similar results for you. Write *Refractories Division, H. K. Porter Company, Inc., Porter Building, Pittsburgh 19, Pa.*

REFRACTORIES PORTER DIVISION

H.K. PORTER COMPANY, INC.

PORTER SERVES INDUSTRY: with Rubber and Friction Products—THERMOID DIVISION; Electrical Equipment—DELTA-STAR ELECTRIC DIVISION, NATIONAL ELECTRIC DIVISION; Specialty Alloys—RIVERSIDE-ALLOY METAL DIVISION; Refractories—REFRACTORIES DIVISION; Eldctric Furnace Steel—CONNORS STEEL DIVISION, VULCAN-KIDD STEEL DIVISION; Fabricated Products—DISSTON DIVISION, FORGE AND FITTINGS DIVISION, LESCHEN WIRE ROPE DIVISION, MOULDINGS DIVISION, H. K. PORTER COMPANY de MEXICO, S. A.; and in Canada, Refractories, "Disston" Tools, "Federal" Wires and Cables, "Nepcoduct" Systems—H. K. PORTER COMPANY (CANADA) LTD.

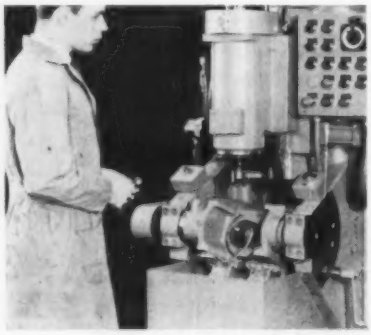
NEW EQUIPMENT

tensile testing machine itself. Now this can be done outside the tester without tying it up. Two models are available, with maximum temperatures of 1800° and 2200°F. (Arcweld Mfg. Co.)

For more data circle No. 77 on postcard, p. 99

Turns Ball Studs, Etc.

A new machine and technique have been developed for machining any type of truncated sphere (ball studs, etc.) in two fast operations. Parts are heat-treated before working to insure that machining will remove decarburized metal and generate a clean, functional surface. The ball stud, as an example, is positioned with the center of the ball at the crown in the same horizontal plane with the intersection of the shoulder and the sphere. The part is rotated, and a special



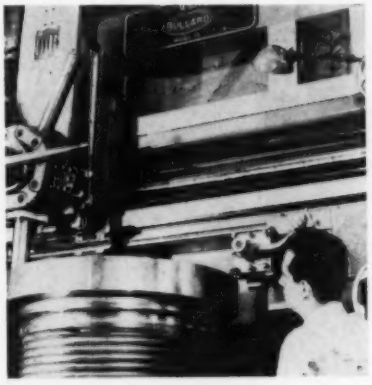
U-shaped cutting tool using two round throwaway carbide inserts removes the bulk of the stock, generating a 40 to 60-microinch finish, to 0.001-in. tolerance. Then the ball is honed to final geometric accuracy, size, and surface finish. About 0.002 in. of stock is removed, with a 6 to 10-microinch finish and with sphericity within 0.0003 in. A functional cross-hatch lay pattern is generated on the surface. The process is economical and very fast. (Micromatic Hone Corp.)

For more data circle No. 78 on postcard, p. 99

Vertical Turret Lathe

Users report production cost savings of 20 to 30 pct over older machines with a new vertical turret

lathe capable of working parts up to 46-in. diam. Running time is the biggest saving, since this machine can take ID and OD cuts simultaneously. Rigid and solid in construction, including its higher head.

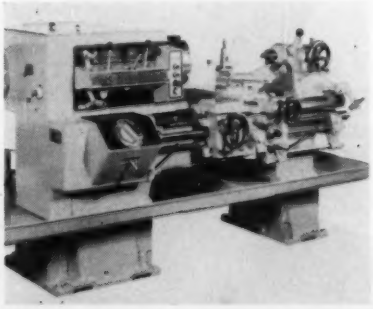


it can take heavy cuts—as much as ½ in. at 250 sfpm—and maintain concentricity to two-tenths. Its size permits doing larger work, also. (The Bullard Co.)

For free copy circle No. 79 on postcard, p. 99

Improved Lathe

The 2013 Clearing-Axelson lathe boasts new improvements. Greater horsepower maintains precision on heavy cuts for increased production. Increased speed range permits running many materials at optimum speeds with latest tooling. An enclosed gear box improves lubrication. Swinging 22½ in. over



the bed and 13¾ over the carriage, the lathe has a large carriage and compound cross-slide to eliminate chatter and vibration on heavy cuts. A micrometer cross-feed threading stop permits control of diameters to 0.0005 in. (Clearing Div., U. S. Industries, Inc.)

For free copy circle No. 80 on postcard, p. 99

The only one of its kind in the country...

SEE THE DIFFERENCE
New 1000-lb. coil is neatly wound for maximum efficiency.

RIVERSIDE-ALLOY'S CONTINUOUS CASTING PROCESS PREVENTS POROSITY... SLASHES RELOADING TIME

Since phosphor bronze is one of the most difficult non-ferrous alloys to make satisfactorily into wire, how does Riverside keep so far ahead of competition? Here's one of the reasons: *Continuous casting*, a radical new and secret process, exclusive in America at Riverside-Alloy.

A special method of continuous casting eliminates the porosity of wire cast in water-cooled molds . . . brings you weld-free wire in coils up to 1000 lbs.

SPEED. With this new large coil your production runs are longer than ever before. Riverside wire speeds and smooths your fabrication and scheduling.

QUALITY. Riverside *continuous-cast* material is denser, more homogeneous than antiquated mold-cast products. Wire drawn from the continuous coil is stronger, free from weak spots which can stop production and cause high reject rates.

Your production equipment can be easily adapted to hold the new 1000-lb. coils of Riverside continuous-cast bronze wire. Find out how you can save with this remarkable new process. Write *Riverside-Alloy Metal Division, H. K. Porter Company, Inc., Riverside, N. J.*

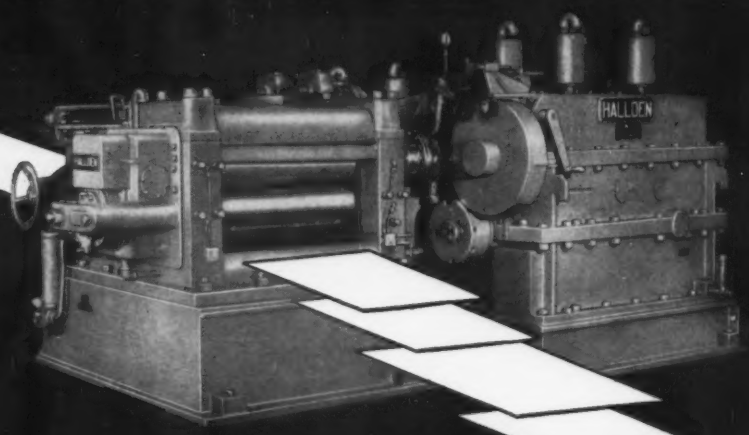
RIVERSIDE-ALLOY PORTER **METAL DIVISION**

H.K. PORTER COMPANY, INC.

PORTER SERVES INDUSTRY: with Rubber and Friction Products—THERMOID DIVISION; Electrical Equipment—DELTA-STAR ELECTRIC DIVISION, NATIONAL ELECTRIC DIVISION; Specialty Alloys—RIVERSIDE-ALLOY METAL DIVISION; Refractories—REFRACTORIES DIVISION; Electric Furnace Steel—CONNORS STEEL DIVISION, VULCAN-KIDD STEEL DIVISION; Fabricated Products—DISSTON DIVISION, FORGE AND FITTINGS DIVISION, LESCHEN WIRE ROPE DIVISION, MOULDINGS DIVISION, H. K. PORTER COMPANY de MEXICO, S. A.; and in Canada, Refractories, "Disston" Tools, "Federal" Wires and Cables, "Nepcoduct" Systems—H. K. PORTER COMPANY (CANADA) LTD.

NOW - A NEW "Push Button" FLYING SHEAR

NO DOWN TIME to change cut length or synchronization



A HALLDEN SHEAR EXCLUSIVE

A major improvement in high production continuous strip process in-line shearing.

Revolutionary new designs now permit synchronization adjustment AND gear changes to be made without stopping production. Changes in cut lengths are made in just seconds.

Hallden Shears can be furnished in processing lines built by leading machinery manufacturers the world around.

DESIGNED AND BUILT BY

HALLDEN

THE SHEARING SPECIALISTS

THE HALLDEN MACHINE COMPANY • THOMASTON, CONNECTICUT

Associates: The W. H. A. Robertson & Co. Ltd. Bedford, England

The Iron Age Summary

Shortage Critical, T-H Won't Help

Steel supplies are less than half of what they were when the strike began. Even if Taft-Hartley is invoked, it won't help much.

Foreign steel, as an emergency source, has broken down.

■ Federal action in the steel strike is now more or less academic as far as steel supplies are concerned.

Steel stocks today are about 10 million tons, less than half what they were when the strike started. Even this is unbalanced by type, size and location. And it includes obsolete material, rusting steel, age-hardened sheets and probably some unusuable items.

In addition, some of this is in-process material. It can not be used unless balanced out with new supplies.

Shortages to Continue — There will be steel shortages of most products for the next six months, even if the Taft-Hartley Act is immediately invoked. An 80-day cooling off period probably won't produce more than 14 million tons of steel. This is about the amount needed for actual use.

There will be no real gain in steel stocks from T-H. Failure to reach a settlement after the 80-day injunction could find the country with less than 7 million tons of steel and —at the worst—prospects of a renewed strike.

No Foreign Aid—Foreign steel, as an emergency source, has broken down. Most foreign outlets are sold out months ahead and any orders placed now can not be counted on to ease the strike-created shortage.

European deliveries appear to be dropping off. Steelmakers there have a hot steel market of their own on their hands and are taking care of it. They aren't offering any more material for fourth quarter delivery than they had already promised. This applies even to wire, where imported steel has made its deepest penetration into U. S. markets.

Layoffs to Spread—Layoffs announced in the auto industry are only the beginning. Although production of cars may extend for several weeks, workers in parts plants are dropping out fast and layoffs will spread as the last material starts through the large automotive pipelines to final assembly.

Layoffs are not confined to the auto industry by any means. And the critical shortages have spread from the Midwest to East and South. There is some evidence that the West Coast is in the least critical situation. At least, warehouse supplies there are in better shape.

Long Wait—It's important for users to realize that deliveries after the strike's end (or invocation of T-H) will not begin for weeks. Some few items that are on hand will be shipped out immediately and some that do not require pipeline filling may move in two or three weeks. But most will not be moving in great quantity for 60 days or more.

The strike's end plus four weeks is still a conservative estimate for any substantial flow of steel.

Steel Output, Operating Rates

Production	This Week	Last Week	Month Ago	Year Ago
(Net tons, 000 omitted)	368	368	353	1,901
Ingot Index				
(1947-1949=100)	22.9	22.9	22.0	118.3
Operating Rates				
Chicago	5.0	5.0	5.0	79.0
Pittsburgh	4.0	4.0	3.0	65.5
Philadelphia	12.0	12.0	12.0	76.0
Valley	10.0	10.0	10.0	52.5
West	0.0	0.0	0.0	74.0
Cleveland	0.0	0.0	0.0	74.0
Detroit	25.0	25.0*	24.0	76.0
Buffalo	0.0	0.0	0.0	59.0
South Ohio River	72.0	65.0*	63.0	74.0
South	12.0	12.0	12.0	62.0
Upper Ohio River	55.0	53.0*	48.0	78.5
St. Louis	95.0	97.0*	87.0	96.0
Aggregate	13.0	13.0	12.5	70.4

*Revised

Prices At a Glance

(Cents per lb unless otherwise noted)	This Week	Week Ago	Month Ago	Year Ago
Composite price				
Finished Steel base	6.196	6.196	6.196	6.196
Pig Iron (gross ton)	$66.41	$66.41	$66.41	$66.49
Scrap No. 1 hvy (Gross ton)	$43.17	$42.50	$41.17	$43.50
No. 2 bundles	$29.17	$28.50	$27.67	$29.17
Nonferrous				
Aluminum ingot	26.80	26.80	26.80	26.80
Copper, electrolytic	30-31.5	30-31.5	30.00	26.50
Lead, St. Louis	12.80	12.80	12.80	10.80
Magnesium	36.00	36.00	36.00	36.00
Nickel, electrolytic	74.00	74.00	74.00	74.00
Tin, Straits, N. Y.	102.50	102.625	102.50	94.25
Zinc, E. St. Louis	12.00	12.00	11.00	10.00

Gear Prices Expected to Climb

Gear prices have already started to inch upwards. Deliveries, presently good, are expected to slow down.

Even if steel prices remain constant, a gear price increase of 4 to 6 pct is forecast.

▪ Buyer interest is concentrating heavily on gears and gear trains this month. Gear delivery is excellent, but prices are already inching upward. And deliveries may slow in the next two to six weeks.

Indications that the steel strike was affecting gear business appeared as early as mid-August. Some producers report new ordering began to fall off that early. Gear delivery, despite sinking steel inventories, has actually speeded up slightly over the past four weeks.

Two Trends—For the gear buyer, there are two trends to be watched carefully as the fourth quarter business pattern develops. First, further advances in gear prices seem almost a must. In the event of a steel settlement that would raise steel prices, an advance of 5-10 pct is expected. But even if steel prices hold at present levels, at least a 4 to 6 pct gear price increase is being forecast.

The reason: Both forgings and castings have advanced in price by at least 5 pct since the beginning of this year. Foundries began reporting wage advances in the first quarter of this year, and have boosted prices accordingly.

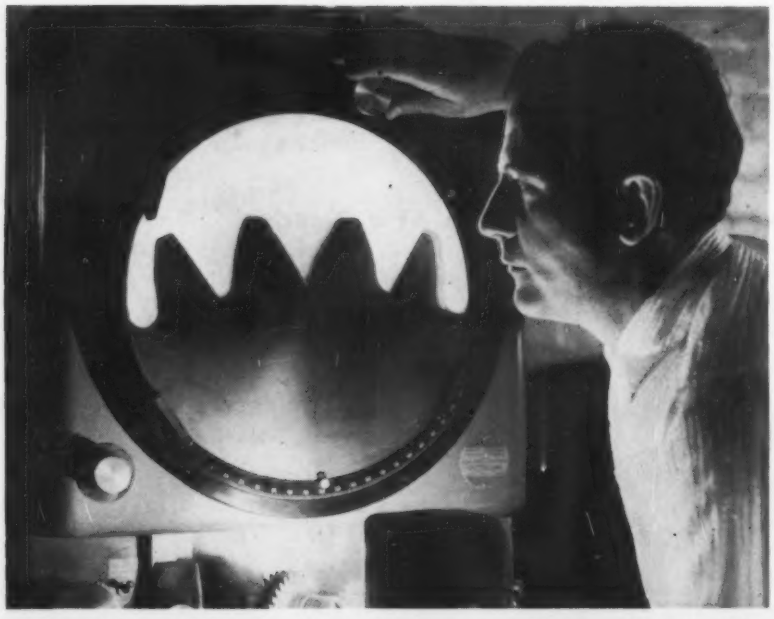
Forging prices have already advanced. But with another round of forgings wage settlements scheduled for next month, it appears that further forgings price increases are in the books. Since both forgings and castings are part of the raw material of the gear finishing industry, they are bound to pass on at least part of this increase.

Wage Increase—At the same time, a number of gear manufacturers are faced with wage increases in their plants. This will be fairly widespread by November. Gear makers were already expressing alarm over slipping profit margins last year. It is regarded as dead certain that they'll pass along substantial portions of their own increased employment costs.

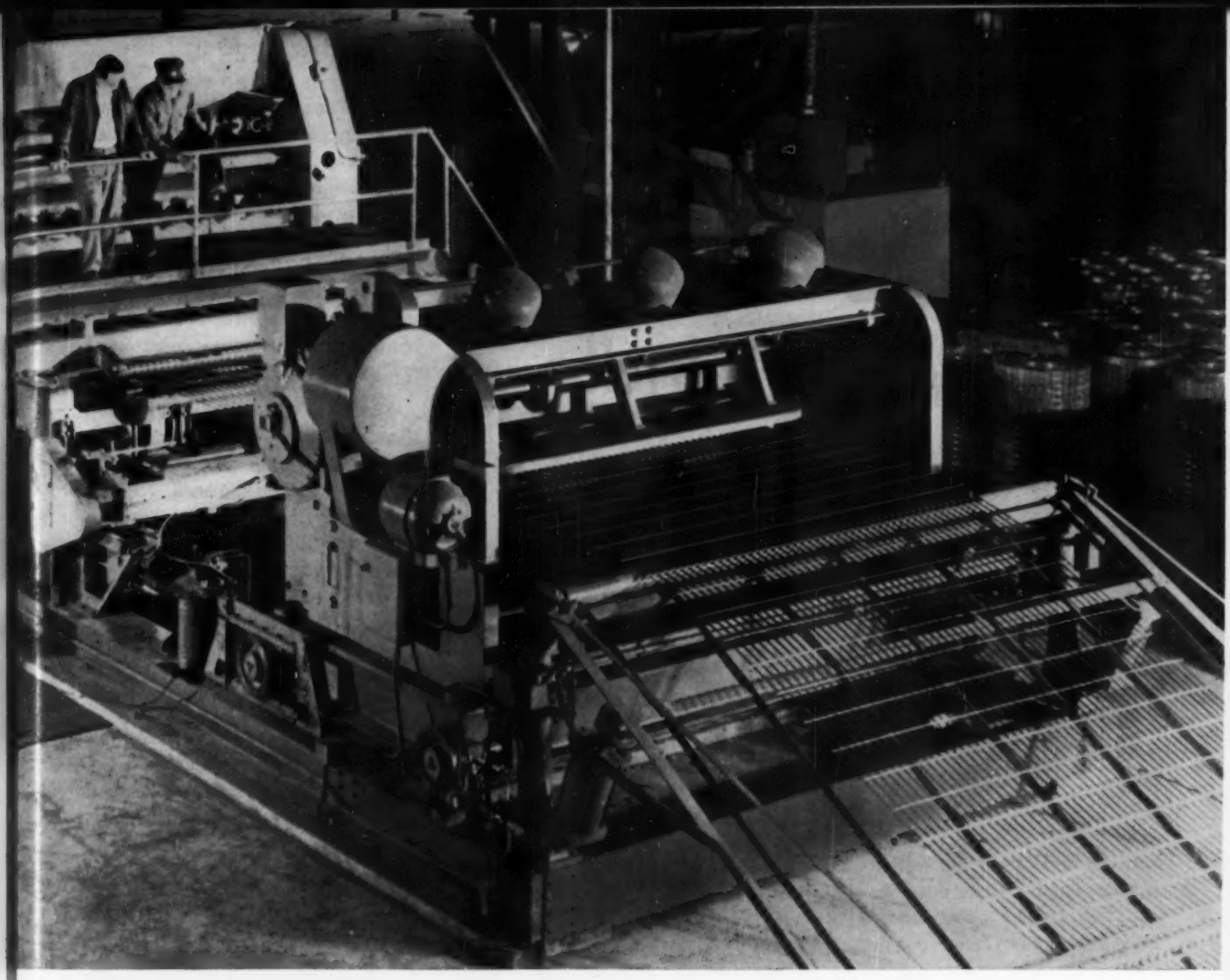
Second trend: A few gearmakers are already expressing concern over availability of gear stock expected from steel mills in the fourth quarter. Their stocks of large rounds are already badly depleted. Some shops report they'll have to begin cutting down output within the next two weeks, even though the industry has had almost no problem with steel thus far.

Delivery Delays—With inventories down, they'll have to depend on lengthened mill bar rolling cycles to replenish their stocks of bars and rounds. This will cut gear output; and extend delivery times.

Better Inspection of Complex Surfaces



DETECTIVE WORK: A transmission gear assembly, magnified 10 times and projected on a radar-like screen, is inspected for inaccuracies by a Ford Motor Co. technician. Contour projector uses an optical system to enlarge view of complex surfaces.



Cincinnati® Shear cuts wire mesh at Pittsburgh Steel

The Cincinnati Shear shown is part of an automatic wire welding machine at Pittsburgh Steel Company, Monessen, Pennsylvania. The machine produces wire mesh and fabric used for concrete pipe, buildings, and other applications. The photograph shows the shear cutting forty-seven 2/0 gauge (.331″) wires per stroke. The wire is low carbon, cold drawn steel. Other jobs require shearing mesh with wires up to ½″ diameter. This shear was specially engineered for this type of application. Because cuts are heavy and production is continuous, Cincinnati dependability is essential.

Standard Cincinnati Shears offer such productive features as powerful hydraulic hold downs, all-steel interlocked construction, and one-clearance shearing of different metal thicknesses.

Write Department B for Shear Catalog S-7R.

Shapers / Shears / Press Brakes

THE CINCINNATI SHAPER CO.

Cincinnati 11, Ohio

Swapping Increases As Stocks Dwindle

With steel supplies dwindling, users try every method possible to keep going.

They are trading sizes and grades with each other, substituting where they can. Conversion deals are popular.

■ Steel users, with supplies running out, are using every method they can think of to keep going.

Swapping of grades and sizes between customers or warehouses is widespread. Where possible, substitution of one product for another is used. Some large consumers, such as General Motors and Chrysler, are lining up conversion tonnages for rolling on sheet mills.

Construction Pinch—Despite all this, more and more steel users are shutting up shop or operating on reduced work weeks.

Trading off and substituting products is especially active in the construction industry. Builders are using H-beams for I-beams when necessary.

The lack of steel is forcing many builders to halt work entirely. Warehouse stocks of structurals and plate are just about cleaned out. This applies even to service centers which specialize in construction products and stocked up last spring.

Road Work Hurt — Highway work is especially hard hit by the steel shortage. Ohio state highway officials blame the strike for delays which will hold up some construction until next summer. Bridge building in other sections has been crippled by the lack of steel.

Here's an example of the extremes users are going to in an effort to get steel. A Buffalo manufacturer, down to one week's supply of steel, needed coils of sheet. He heard about an Ohio consumer with 75 tons of sheet it wanted galvanized. In a previous call the Buffalo buyer had also heard about a Canadian company with excess galvanized sheet.

Result: The Buffalo PA made some calls. The Canadian galvanized sheet was sent to Ohio, the Ohio user shipped the Buffalo plant the carbon sheet. Although the Buffalo buyer paid a premium price for his steel, he was glad to get it.

Conversion Steel — Automakers say present steel supplies will permit production through late October or early November. But several have completed arrangements to buy conversion ingots from mills now operating.

General Motors will take a "substantial tonnage of ingots and semi-finished steel" from Phoenix Steel Corp., Phoenixville, Pa. Steel will be supplied from openhearths of the company at Harrisburg and Phoenixville. It will probably be rolled at sheet mills in the Midwest. Weirton Steel Co. and Great Lakes Steel Corp. are mentioned as possibilities.

Chrysler Corp. has announced a conversion arrangement with Lone Star Steel Co., Dallas.

Sheet — Post-strike backlogs at sheet mills extend four months or more. Both mills and sheet users are lining up semi-finished steel for rolling. In this way they hope to lessen the time needed to get shipments moving after the strike.

Foreign sheet is now being offered in the **Midwest** at prices of around 15¢ to 17¢ a pound. This compares with domestic prices of 8¢ to 9¢ a pound.

Wire Products — Shortages of industrial wire are showing up, especially in the **Midwest.** Demand from users exceeds original forecasts. The supply pinch comes even with some wire mills still operating. Most of these producers, however, have just about exhausted their semi-finished stocks of billets.

Eastern wire mills also report some customers are running out of supplies. Generally, they are the users who didn't build large prestrike inventories. One mill man estimates this current backlog in wire products for his company: Manufacturers wire and rod—60-75 days; merchant wire products—45-60 days.

Pipe and Tubing—Jobbers and pipe users are handling shortages by trading sizes where they can. As yet, shortages are not as critical as products like sheet, plate, and structurals. Mills say the rate of new orders has tapered off a bit. Some **Pittsburgh** producers are quoting delivery (after the strike) of 8 weeks for buttweld pipe. Tubular specialties are promised for shipment in 6 weeks. Backlogs of oil country seamless are about two months at one mill. Heavy casing is available in less time.

PURCHASING AGENT'S CHECKLIST

New uses push beryllium sales to new highs. P. 39

Inventory control plays important part in effective plans of production control. P. 76

New, large-size refractory blocks speed relining time, cut labor costs. P. 83

COMPARISON OF PRICES

(Effective Sept. 29, 1959)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price changes from previous week are shown by an asterisk (*).

	Sept. 29 1959	Sept. 22 1959	Sept. 1 1959	Sept. 30 1958
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	5.10¢	5.10¢	5.10¢	5.10¢
Cold-rolled sheets	6.275	6.275	6.275	6.275
Galvanized sheets (10 ga.)	6.875	6.875	6.875	6.875
Hot-rolled strip	5.10	5.10	5.10	5.10
Cold-rolled strip	7.425	7.425	7.425	7.425
Plate	5.30	5.30	5.30	5.30
Plates, wrought iron	13.55	13.55	13.55	13.55
Stainl's C-R strip (No. 302)	52.00	52.00	52.00	52.00
Tin and Terneplate: (per base box)				
Tinplate (1.50 lb.) cokes	$10.65	$10.65	$10.65	$10.80
Tin plates, electro (0.50 lb.)	9.35	9.35	9.35	9.00
Special coated mfg. ternes	9.90	9.90	9.90	9.55
Bars and Shapes: (per pound)				
Merchant bar	5.675¢	5.675¢	5.675¢	5.675¢
Cold finished bar	7.65	7.65	7.65	7.65
Alloy bar	6.725	6.725	6.725	6.725
Structural shapes	5.50	5.50	5.50	5.50
Stainless bars (No. 302)	46.75	46.75	46.75	45.00
Wrought iron bars	14.90	14.90	14.90	14.90
Wire: (per pound)				
Bright wire	8.00¢	8.00¢	8.00¢	8.00¢
Rails: (per 100 lb.)				
Heavy rails	$5.75	$5.75	$5.75	$5.75
Light rails	6.725	6.725	6.725	6.725
Semifinished Steel: (per net ton)				
Rerolling billets	$80.00	$80.00	$80.00	$80.00
Slabs, rerolling	80.00	80.00	80.00	80.00
Forging billets	99.50	99.50	99.50	99.50
Alloys, blooms, billets, slabs	119.00	119.00	119.00	119.00
Wire Rods and Skelp: (per pound)				
Wire rods	6.40¢	6.40¢	6.40¢	6.40¢
Skelp	5.05	5.05	5.05	5.05
Finished Steel Composite: (per pound)				
Base price	6.196¢	6.196¢	6.196¢	6.196¢

	Sept. 29 1959	Sept. 22 1959	Sept. 1 1959	Sept. 30 1958
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	$70.57	$70.57	$70.57	$70.97
Foundry, Southern Cin'ti	73.87	73.87	73.87	73.87
Foundry, Birmingham	62.50	62.50	62.50	62.50
Foundry, Chicago	66.50	66.50	66.50	66.50
Basic, del'd Philadelphia	70.07	70.07	70.07	70.47
Basic, Valley furnace	66.00	66.00	66.00	66.00
Malleable, Chicago	66.50	66.50	66.50	66.50
Malleable, Valley	66.50	66.50	66.50	66.50
Ferromanganese, 74-76 pct Mn, cents per lb‡	12.25	12.25	12.25	12.25
Pig Iron Composite: (per gross ton)				
Pig iron	$66.41	$66.41	$66.41	$66.49
Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	$45.50	$45.50	$45.50	$44.50
No. 1 steel, Phila. area	43.50*	41.50	39.50	41.50
No. 1 steel, Chicago	40.50	40.50	38.50	44.50
No. 1 bundles, Detroit	39.50	39.50	38.50	32.50
Low phos., Youngstown	45.50	45.50	45.50	45.50
No. 1 mach'y cast, Pittsburgh	53.50	53.50	52.50	51.50
No. 1 mach'y cast, Phila.	52.50	52.50	50.50	49.50
No. 1 mach'y cast, Chicago	62.50	62.50	60.50	53.50
Steel Scrap Composite: (per gross ton)				
No. 1 hvy. melting scrap	$43.17*	$42.50	$41.17	$43.50
No. 2 bundles	29.17*	28.50	27.67	29.17
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	$14.50-15.50	$14.50-15.50	$14.50-15.50	14.50
Foundry coke, prompt	18.50	18.50	18.50	18-18.50
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electrolytic, Conn.	30-31.50	30-31.50	30.00	26.50
Copper, Lake, Conn.	31.50	31.50	30.00	26.50
Tin, Straits, N. Y.	102.50†	102.625	102.50	94.25
Zinc, East St. Louis	12.00*	12.00	11.00	10.00
Lead, St. Louis	12.80	12.80	12.80	10.80
Aluminum, virgin ingot	26.80	26.80	26.80	26.80
Nickel, electrolytic	74.00	74.00	74.00	74.00
Magnesium, ingot	36.00	36.00	36.00	36.00
Antimony, Laredo, Tex.	29.50	29.50	29.50	29.50

† Tentative. ‡ Average. ** Revised.

Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo and Birmingham.

Steel Scrap Composites

Average of No. 1 heavy melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

man conquers mountains

And, some day, man will also conquer cancer. With your help.

Guard your family . . . fight cancer with a checkup and a check

AMERICAN CANCER SOCIETY

INDEX TO PRICE PAGES

Prices At a Glance	107
Comparison of Prices	111
Bars	120
Billets, Blooms and Slabs	118
Boiler Tubes	122
Bolts, Nuts, Rivets, Screws	123
Clad Steel	122
Coke	122
Electrical Sheets	122
Electrodes	122
Electroplating Supplies	123
Ferroalloys	125
Iron Ore	122
Merchant Wire Products	122
Metal Powders	123
Nonferrous	
Mill Products	117
Primary Prices	111-116-117
Remelted Metals	117
Scrap	117
Piling	118
Pig Iron	124
Pipe and Tubing	121
Plates	120
Rails	122
Refractories	122
Service Center Prices	123
Shapes	118
Sheets	119
Spring Steel	122
Stainless	124
Steel Scrap	114
Strip	118
Structurals	118
Tinplate	119
Tool Steel	122
Track Supplies	122
Water Pipe Index	123
Wire	120
Wire Rod	119

RAIL and TRACK ACCESSORIES

Get the advantage of "single-source" buying for all your needs in industrial track and crane runways. Prompt deliveries assured from the nation's largest warehouse stocks of rail, switch material, tools and construction products. Foster is national distributor to industry for major manufacturers, such as Weir-Kilby, Woodings-Verona, Nolan, Western Industries and others.

Refer to our catalogs in Sweet's File

L B FOSTER CO

PITTSBURGH 30 NEW YORK 7 CHICAGO 4
HOUSTON 2 LOS ANGELES 5 ATLANTA 8

Pressure on Prices Keeps Building

Prices rose again this week in many markets. And the same factors could bring further increases.

An expected break in the steel strike, a strong export market and less available scrap are reasons.

▪ Prices rose again this week in several districts. The pressure forcing prices upward continues to come from several forces.

Export markets are active. Dealers and brokers optimistically expect some break in the steel strike to come fairly soon. And industrial sources of scrap are beginning to dry up.

Auto Lists Off—Auto company lists are smaller than normal for October. In some cases, the scrap is being diverted to captive foundries. Cutbacks in production due to shortages of material is another cause for the smaller tonnages.

At the same time, smaller users such as forge shops, foundries and mills still operating are all using more than their normal tonnages of scrap. Any additional demand for scrap will likely bring sharp increases in scrap prices in all market areas.

Pittsburgh—The scrap market is "nervous, active and strong." The feeling is something will have to happen soon in the steel strike. With this prospect, brokers are pushing to line up scrap. At the same time, conversion deals are creating an abnormal demand for scrap by forge shops, foundries and other small users. Finally, auto lists are running only about 60 pct of normal for this period. Quantities are not considered firm on two of the big lists. All factors point to higher prices.

Chicago — Scrap continues tight as dealers seek to build inventories. More metalworking slowdowns and shutdowns cut scrap collections again this week. New factory bundle list prices advanced and all grades of railroad steel are very strong. Scrap producers continue to hold shipments of scrap, waiting for higher post-strike prices.

Philadelphia—The market is very firm on all prices, with most grades showing an increase of $2 a ton. The strong export demand continues, and it's probable that any serious effort by domestic mills to compete with it would force prices even higher.

New York — Export sales plus some domestic business have sent steelmaking grades up $1 and some cast grades up $2 per ton. The cast increase stems primarily from heavier buying by pipe foundries.

Detroit—October industrial lists are expected to be higher than a month ago. Some automakers and their parts divisions aren't making shipments to successful bidders. Some scrap is being taken from the General Motors lists, for example, and is going to GM foundries. Detroit Ternstedt, GM trim supplier, took two bids but didn't award them. Fisher Body and AC Spark Plug, Flint, reportedly are offering less tonnage than is normal for October.

Cleveland — Market is growing stronger based on the feeling the strike is nearing an end and mills will need scrap to resume production. While most mills in the area have adequate inventories, or arrangements for post-strike delivery, there are still many who haven't. Auto lists in the Cleveland area for October are about 22,000 tons—nearly normal, but strikes and steel shortages might cut it down.

St. Louis—With mills here operating at around 100 pct of capacity and the fact that one mill is making ingots for conversion sent scrap prices higher. Demand was very strong and openhearth grades are being bought and sold on more of a "What will you pay?" basis, than by any set price.

Cincinnati — Market is stronger based on early, small industrial lists which were up $2 to $3 over a month ago. Market strength will depend on how bad mills want scrap in October and whether the strike ends. Area mills generally have good inventories.

Birmingham — An Atlanta steel mill bought scrap at unchanged prices but movement in the Birmingham area is slow. Brokers say the market likely will continue steady for the next few weeks. However, opinion is divided on which way it will go once orders pick up.

Buffalo — A strong undertone continues in the market here, but there have been no sales. Prices are firm in the face of dealer optimism.

Boston—There is a firm undertone in the market with several grades of scrap up $1. Export activities, which continue to dominate the market, are going smoothly.

West Coast—Over 50,000 tons of export scrap will leave West Coast ports during October. Scrap intake is slow.

Houston — Prices remain unchanged with export still dominating the market. Brokers continue to quote prices at $1 to $5 a ton higher for overseas shipment.

Last year, traffic accidents killed 37,000, injured 1,400,000

. . . and they wasted Five Billion Dollars!

Traffic accidents' human toll is so tragic we sometimes overlook their staggering economic waste. Five Billion Dollars in lost wages, medical expenses, insurance costs and property damage! Your business—every business—shares in this loss. So you have a double interest in helping reduce traffic accidents. And you *can* help! Drive safely and obey the law yourself . . . certainly. But go further. Use your influence to promote safe driving and urge strict law enforcement. To make your efforts more effective, join with others working actively to reduce traffic hazards in your community. *Support your local Safety Council!*

Published in an effort to save lives, in cooperation with the National Safety Council and The Advertising Council.

SCRAP PRICES *(Effective Sept. 29, 1959)*

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Pittsburgh

No. 1 hvy. melting	$45.00 to $46.00
No. 2 hvy. melting	35.00 to 36.00
No. 1 dealer bundles	46.00 to 47.00
No. 1 factory bundles	51.00 to 52.00
No. 2 bundles	31.00 to 32.00
No. 1 busheling	45.00 to 46.00
Machine shop turn.	22.00 to 23.00
Shoveling turnings	29.00 to 30.00
Cast iron borings	28.00 to 29.00
Low phos. punch'gs plate	51.00 to 52.00
Heavy turnings	36.00 to 37.00
No. 1 RR. hvy. melting	48.00 to 49.00
Scrap rails, random lgth.	56.00 to 57.00
Rails 2 ft and under	61.00 to 62.00
RR specialties	54.00 to 55.00
No. 1 machinery cast.	53.00 to 54.00
Cupola cast.	47.00 to 48.00
Heavy breakable cast.	45.00 to 46.00
Stainless	
18-8 bundles and solids	235.00 to 240.00
18-8 turnings	115.00 to 120.00
430 bundles and solids	130.00 to 135.00
410 turnings	55.00 to 60.00

Chicago

No. 1 hvy. melting	$40.00 to $41.00
No. 2 hvy. melting	37.00 to 38.00
No. 1 dealer bundles	40.00 to 41.00
No. 1 factory bundles	47.00 to 48.00
No. 2 bundles	27.00 to 28.00
No. 1 busheling	40.00 to 41.00
Machine shop turn.	22.00 to 23.00
Mixed bor. and turn.	24.00 to 25.00
Shoveling turnings	24.00 to 25.00
Cast iron borings	24.00 to 25.00
Low phos. forge crops	53.00 to 54.00
Low phos. punch'gs plate, ¼ in. and heavier	52.00 to 53.00
Low phos. 2 ft and under	50.00 to 51.00
No. 1 RR hvy. melting	46.00 to 47.00
Scrap rails, random lgth.	56.00 to 57.00
Rerolling rails	64.00 to 65.00
Rails 2 ft and under	61.00 to 62.00
Angles and splice bars	55.00 to 56.00
RR steel car axles	61.00 to 62.00
RR couplers and knuckles	52.00 to 53.00
No. 1 machinery cast.	62.00 to 63.00
Cupola cast.	55.00 to 56.00
Cast iron wheels	49.00 to 50.00
Malleable	63.00 to 64.00
Stove plate	51.00 to 52.00
Steel car wheels	52.00 to 53.00
Stainless	
18-8 bundles and solids	215.00 to 220.00
18-8 turnings	115.00 to 120.00
430 bundles and solids	115.00 to 120.00
430 turnings	55.00 to 60.00

Philadelphia Area

No. 1 hvy. melting	$43.00 to $44.00
No. 2 hvy. melting	37.00 to 38.00
No. 1 dealer bundles	44.00 to 45.00
No. 2 bundles	28.00 to 29.00
No. 1 busheling	43.00 to 44.00
Machine shop turn.	22.00 to 23.00
Mixed bor. short turn.	22.00 to 23.00
Cast iron borings	21.00 to 22.00
Shoveling turnings	25.00 to 26.00
Clean cast. chem. borings	30.00 to 31.00
Low phos. 5 ft and under	45.00 to 46.00
Low phos. 2 ft punch'gs	46.00 to 47.00
Elec. furnace bundles	45.00 to 46.00
Heavy turnings	34.00 to 35.00
RR specialties	47.00 to 48.00
Rails 18 in. and under	62.00 to 63.00
Cupola cast.	42.00 to 43.00
Heavy breakable cast.	45.00 to 46.00
Cast iron car wheels	47.00 to 48.00
Malleable	67.00 to 68.00
No. 1 machinery cast.	52.00 to 53.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$35.50 to $36.50
No. 2 hvy. melting	30.50 to 31.50
No. 1 dealer bundles	35.50 to 36.50
No. 2 bundles	25.00 to 26.00
Machine shop turn.	17.00 to 18.00
Shoveling turnings	19.00 to 20.00
Cast iron borings	18.00 to 19.00
Low phos. 18 in. and under	47.00 to 48.00
Rails, random length	50.00 to 51.00
Rails, 18 in. and under	58.00 to 59.00
No. 1 cupola cast.	47.00 to 48.00
Hvy. breakable cast.	43.00 to 44.00
Drop broken cast.	57.00 to 58.00

Youngstown

No. 1 hvy. melting	$44.00 to $45.00
No. 2 hvy. melting	37.00 to 38.00
No. 1 dealer bundles	44.00 to 45.00
No. 2 bundles	27.50 to 28.50
Machine shop turn.	18.50 to 19.50
Shoveling turnings	23.50 to 24.50
Low phos. plate	45.00 to 46.00

Cleveland

No. 1 hvy. melting	$40.50 to $41.50
No. 2 hvy. melting	33.50 to 34.50
No. 1 dealer bundles	40.50 to 41.50
No. 1 factory bundles	44.50 to 45.50
No. 2 bundles	24.00 to 25.00
No. 1 busheling	40.50 to 41.50
Machine shop turn.	15.00 to 16.00
Mixed bor. and turn.	20.00 to 21.00
Shoveling turnings	20.00 to 21.00
Cast iron borings	20.00 to 21.00
Cut structural & plates, 2 ft & under	46.50 to 47.50
Drop forge flashings	40.50 to 41.50
Low phos. punch'gs plate	41.50 to 42.50
Foundry steel, 2 ft & under	40.00 to 41.00
No. 1 RR hvy. melting	44.00 to 45.00
Rails 2 ft and under	57.00 to 58.00
Rails 18 in. and under	58.00 to 59.00
Steel axle turnings	24.00 to 25.00
Railroad cast.	56.00 to 57.00
No. 1 machinery cast.	54.00 to 55.00
Stove plate	51.00 to 52.00
Malleable	67.00 to 68.00
Stainless	
18-8 bundles	215.00 to 225.00
18-8 turnings	115.00 to 120.00
430 bundles	115.00 to 120.00

Buffalo

No. 1 hvy. melting	$35.00 to $36.00
No. 2 hvy. melting	28.00 to 29.00
No. 1 busheling	35.00 to 36.00
No. 1 dealer bundles	35.00 to 36.00
No. 2 bundles	24.00 to 25.00
Machine shop turn.	16.00 to 17.00
Mixed bor. and turn.	17.00 to 18.00
Shoveling turnings	20.00 to 21.00
Cast iron borings	17.00 to 18.00
Low phos. plate	40.00 to 41.00
Structurals and plate, 2 ft and under	41.00 to 42.00
Scrap rails, random lgth.	39.00 to 40.00
Rails 2 ft and under	49.00 to 50.00
No. 1 machinery cast.	51.00 to 52.00
No. 1 cupola cast.	47.00 to 48.00

St. Louis

No. 1 hvy. melting	$38.00 to $39.00
No. 2 hvy. melting	35.00 to 36.00
No. 1 dealer bundles	43.00 to 44.00
No. 2 bundles	26.00 to 27.00
Machine shop turn.	18.00 to 19.00
Shoveling turnings	20.00 to 21.00
Cast iron borings	22.00 to 23.00
No. 1 RR hvy. melting	45.00 to 46.00
Rails, random lengths	49.00 to 50.00
Rails, 18 in. and under	53.00 to 54.00
Angles and splice bars	48.00 to 49.00
RR specialties	48.00 to 49.00
Cupola cast.	54.00 to 55.00
Heavy breakable cast.	42.00 to 43.00
Stove plate	44.00 to 45.00
Cast iron car wheels	45.00 to 46.00
Rerolling rails	65.00 to 66.00
Unstripped motor blocks	44.00 to 45.00

Birmingham

No. 1 hvy. melting	$35.00 to $36.00
No. 2 hvy. melting	29.00 to 30.00
No. 1 dealer bundles	35.00 to 36.00
No. 1 special bundles	38.00 to 39.00
No. 2 bundles	24.00 to 25.00
No. 1 busheling	40.00 to 41.00
Machine shop turn.	24.00 to 25.00
Shoveling turnings	27.00 to 28.00
Cast iron borings	14.00 to 15.00
Electric furnace bundles	40.00 to 41.00
Elec. furnace, 3 ft & under	38.00 to 39.00
Bar crops and plate	45.00 to 46.00
Structural and plate, 2 ft.	44.00 to 45.00
No. 1 RR hvy. melting	39.00 to 40.00
Scrap rails, random lgth.	46.00 to 47.00
Rails, 18 in. and under	52.00 to 53.00
Angles and splice bars	44.00 to 45.00
Rerolling rails	59.00 to 60.00
No. 1 cupola cast.	53.00 to 54.00
Stove plate	53.00 to 54.00
Cast iron car wheels	43.00 to 44.00
Unstripped motor blocks	41.00 to 42.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$33.00 to $34.00
No. 2 hvy. melting	29.00 to 30.00
No. 2 dealer bundles	22.00 to 23.00
Machine shop turnings	8.00 to 9.00
Mixed bor. and turn.	10.00 to 11.00
Shoveling turnings	12.00 to 13.00
Clean cast. chem. borings	25.00 to 26.00
No. 1 machinery cast.	39.00 to 40.00
Mixed yard cast.	37.00 to 38.00
Heavy breakable cast.	33.00 to 34.00
Stainless	
18-8 prepared solids	195.00 to 200.00
18-8 turnings	85.00 to 90.00
430 prepared solids	85.00 to 90.00
430 turnings	20.00 to 25.00

Detroit

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$36.00 to $37.00
No. 2 hvy. melting	26.00 to 27.00
No. 1 dealer bundles	39.00 to 40.00
No. 2 bundles	21.00 to 22.00
No. 1 busheling	36.00 to 37.00
Drop forge flashings	36.00 to 37.00
Machine shop turn.	16.00 to 17.00
Mixed bor. and turn.	19.00 to 20.00
Shoveling turnings	19.00 to 20.00
Cast iron borings	19.00 to 20.00
Heavy breakable cast.	36.00 to 37.00
Mixed cupola cast.	46.00 to 47.00
Automotive cast.	52.00 to 53.00
Stainless	
18-8 bundles and solids	190.00 to 200.00
18-8 turnings	80.00 to 90.00
430 bundles and solids	85.00 to 95.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$31.00 to $32.00
No. 2 hvy. melting	23.00 to 24.00
No. 1 dealer bundles	31.00 to 32.00
No. 2 bundles	16.00 to 17.00
No. 1 busheling	31.00 to 32.00
Machine shop turn.	11.00 to 12.00
Shoveling turnings	12.00 to 13.00
Clean cast. chem. borings	18.50 to 19.50
No. 1 machinery cast.	40.00 to 41.00
Mixed cupola cast.	37.00 to 38.00
Heavy breakable cast.	34.00 to 35.00

San Francisco

No. 1 hvy. melting	....	$36.00
No. 2 hvy. melting	....	33.00
No. 1 dealer bundles	....	33.00
No. 2 bundles	....	22.00
Machine shop turn.	....	17.00
Cast iron borings	....	17.00
No. 1 cupola cast.	....	47.00

Los Angeles

No. 1 hvy. melting	....	$38.00
No. 2 hvy. melting	....	36.00
No. 1 dealer bundles	....	33.00
No. 2 bundles	$18.00 to	20.00
Machine shop turn.	....	16.00
Shoveling turnings	....	18.00
Cast iron borings	....	18.00
Elec. furn. 1 ft and under (foundry)	47.00 to	48.00
No. 1 cupola cast.	....	47.00

Seattle

No. 1 hvy. melting	....	$35.00
No. 2 hvy. melting	....	33.00
No. 2 bundles	....	22.00
No. 1 cupola cast.	....	36.00
Mixed yard cast.	....	36.00

Hamilton, Ont.

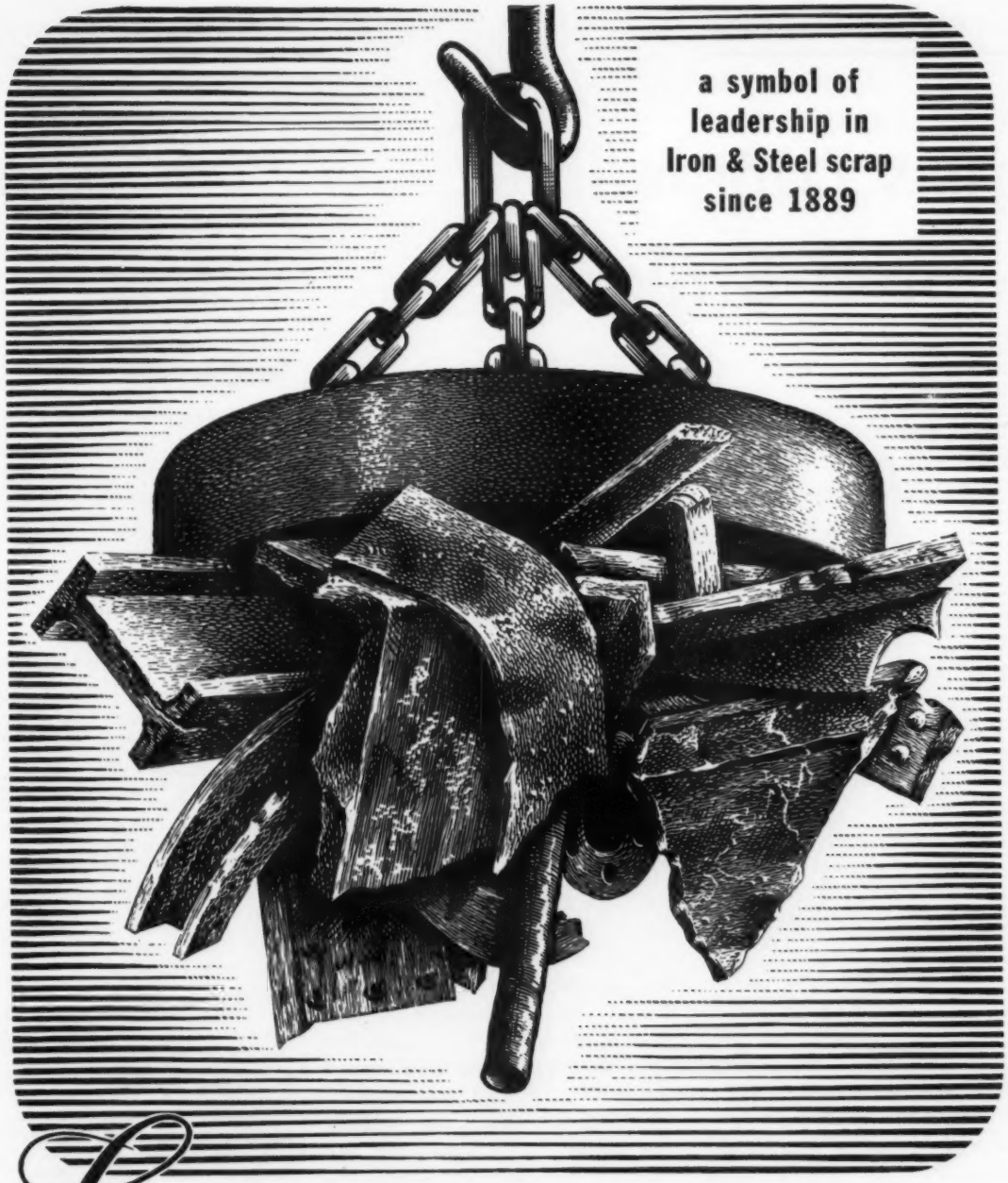
Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	....	$32.25
No. 2 hvy. melting	....	28.25
No. 1 dealer bundles	....	32.25
No. 2 bundles	....	22.75
Mixed steel scrap	....	24.25
Bush., new fact., prep'd.	....	32.25
Bush., new fact., unprep'd	....	26.25
Machine shop turn.	....	14.00
Short steel turn.	....	17.00
Mixed bor. and turn.	....	13.00
Rails, rerolling	....	37.00
Cast scrap	$46.50 to	48.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	....	$34.00
No. 2 hvy. melting	....	31.00
No. 2 bundles	....	20.00
Machine shop turn.	....	16.00
Shoveling turnings	....	20.00
Cut structural plate 2 ft & under	$45.50 to	46.50
Unstripped motor blocks	39.50 to	40.50
Cupola cast.	46.00 to	47.00
Heavy breakable cast.	29.00 to	30.00



Luria Brothers and Company, Inc.

MAIN OFFICE

CHRYSLER BUILDING EAST

New York, N. Y.

PLANTS

READING, PENNA. MODENA, PENNA.

OFFICES

BIRMINGHAM, ALA.	HOUSTON, TEXAS	PHILADELPHIA, PA.
BOSTON, MASS.	KOKOMO, IND.	PITTSBURGH, PA.
BUFFALO, N. Y.	LEBANON, PENNA.	PUEBLO, COLORADO
CHICAGO, ILLINOIS	LOS ANGELES, CAL.	READING, PENNA.
CINCINNATI, OHIO	MEMPHIS, TENN.	ST. LOUIS, MISSOURI
CLEVELAND, OHIO	NEW YORK, N. Y.	SAN FRANCISCO, CAL.
DETROIT, MICHIGAN		SEATTLE, WASH.

in Canada MONTREAL, QUEBEC — HAMILTON, ONTARIO

IMPORT and EXPORT — **LIVINGSTON & SOUTHARD, INC.**, Chrysler Building East, New York, New York • 9350 Wilshire Boulevard, Los Angeles, California
Cable Address: FORENTRACO

Crisis Looms In Copper Strikes

Trade is hopeful as Kennecott and Mine, Mill reopen talks this week in Salt Lake City.

But if negotiations collapse, copper may have to take its cue from the steel industry.

■ The copper labor situation is approaching the crisis. If a break doesn't come within a few weeks, the industry will likely stay down until after steel sets the pattern.

Kennecott Copper Co. meets with the International Union of Mine, Mill and Smelter Workers in Salt Lake City this week. The previous talks hit an impasse, were broken off over a month ago.

Some Optimism—This is where most of the trade is looking for a possible settlement. And there appears to be good reason for the cautious optimism being shown by both sides and others in the trade.

The Federal Mediation and Conciliation Service asked Kennecott and Mine, Mill to meet so the government could decide, in the public interest, if either had changed its position since the talks were broken off.

The closed meeting was held last week in New York. Top union man was Orville Larson, vice president of Mine, Mill, and probably the key man in the copper labor picture.

At this meeting the Salt Lake City date was made.

Meeting Background — One Mine, Mill leader not at the meeting suggests that if neither side had softened its position, then the Salt Lake City meeting would not have been called. The trade is hopefully going along with this appraisal.

Kennecott will use the same team of negotiators, all from its western division, that it did in the first meetings. Orville Larson will join the union team. He drifted in and out of the first sessions.

The trade is wondering how the 17.9¢, two-year package that Kennecott earlier offered to United Steelworkers at its Garfield, U., operation fits into the picture. Kennecott hasn't made Mine, Mill a firm offer yet.

Counter Claims—A union official suggests the company could hardly offer that union a smaller package. This is better than the Anaconda offer of a 6.7¢, one-year package. Many think Mine, Mill would be happy to settle for the USW offer, after a token attempt to get more.

On the other hand, many copper men inplied the Kennecott offer to USW was too generous. Kennecott is aware of this, well may scale down its offer to Mine, Mill downwards.

New England Pact—Also hovering in the background as a possible blueprint for a settlement is the American Brass Co. pacts with Mine, Mill locals at its Torrington and Ansonia, Conn., plants and at Buffalo.

A union official from the West, said last week in New York that sentiment within Mine, Mill for a settlement in this area (13¢, two-years) was gaining rapidly.

Anaconda isn't out of the picture. But its meetings with Mine, Mill have stalled to the point where they are talking only about hospital and welfare plans.

The general feeling is that if the current contracts between the producers and the union are severed again, they are unlikely to be re-established until after the steel industry settles.

Magnesium

The Magnesium Assn. has just about firmed up the program for its 15th Annual Convention, Oct. 19-20, at the Roosevelt Hotel. New York City. As usual, the emphasis is heavy on technology. But there are several papers that ought to offer some interesting data on magnesium marketing.

H. Y. Bassett, president, Calumet & Hecla, Inc., will tell "Why Calumet & Hecla Got Into the Magnesium Business." C&H is part owner, along with Brooks & Perkins, Inc., Detroit, of Alabama Metallurgical Corp., the nation's second magnesium producer.

Tin prices for the week: Sept. 23—102.50; Sept. 24—102.625; Sept. 25 — 102.75; Sept. 28 — 102.50; Sept. 29—102.50.*

*Estimate.

Primary Prices

(cents per lb)	current price	last price	date of change
Aluminum pig	24.70	24.00	8/1/58
Aluminum ingot	26.00	26.10	8/1/58
Copper (E)	30-31.50	30.00	9/9/59
Copper (CS)	33.00	30.00	9/1/59
Copper (L)	31.50	30.00	9/9/59
Lead, St. L.	12.80	11.80	8/24/59
Lead, N. Y.	13.00	12.00	8/24/59
Magnesium ingot	36.00	34.50	8/13/58
Magnesium pig	35.25	33.75	8/13/58
Nickel	74.00	64.50	12/8/58
Titanium sponge	150-160	182-182	8/1/58
Zinc, E. St. L.	12.00	11.00	9/22/59
Zinc, N. Y.	12.50	11.50	9/22/59

ALUMINUM: 99% ingot COPPER: (E) = electrolytic, (CS) = custom smelters, electrolytic. (L) = lake. LEAD: common grade. MAGNESIUM: 99.8% pig Velasco, Tex. NICKEL: Port Colborne, Canada. ZINC: prime western. TIN: See above; Other primary prices, pg. 117.

NONFERROUS PRICES

MILL PRODUCTS

(Cents per lb unless otherwise noted)

ALUMINUM

(Base 30,000 lb, f.o.b. customer's plant)

Flat Sheet (Mill Finish and Plate)

("F" temper except 6061-0)

Alloy	.032	.081	.136 .249	.250- 3.
1100, 3003	45.7	43.8	42.8	43.3
5052	53.1	48.4	46.9	46.0
6061-0	50.1	45.7	43.9	44.9

Extruded Solid Shapes

Factor	6063 T-5	6062 T-6
6- 8	42.7-44.2	51.1-54.8
12-14	42.7-44.2	52.0-56.5
24-26	43.2-44.7	62.8-67.5
36-38	46.7-49.2	86.9-90.5

Screw Machine Stock—2011-T-3

Size"	¼	⅝-⅞	⅝-1	1¼-1½
Price	62.0	61.2	59.7	57.3

Roofing Sheet, Corrugated

(Per sheet, 26" wide base, 16,000 lb)

Length"→	72	98	120	144
.019 gage	$1.411	$1.884	$2.353	$2.823
.024 gage	1.762	2.349	2.937	3.524

MAGNESIUM

(F.o.b. shipping pt., carload frt. allowed)

Sheet and Plate

Type↓ Gage→	.250 3.00	.250- 2.00	.188	.081	.032
AZ31B Stand. Grade	.....	67.9	69.0	77.9	103.1
AZ31B Spec.	.....	93.3	95.7	108.7	171.3
Tread Plate	.....	70.6	71.7	.....	.....
Tooling Plate	73.0	.....	.....	.....	.....

Extruded Shapes

factor→	6-8	12-14	24-26	36-38
Comm. Grade. (AZ31C)	65.3	65.3	66.1	71.5
Spec. Grade... (AZ31B)	84.6	85.7	90.6	104.2

Alloy Ingot

AZ91B (Die Casting)..... 37.25 (delivered)
AZ63A, AZ92A, AZ91C (Sand Casting) 40.75 (Velasco, Tex.)

NICKEL, MONEL, INCONEL

(Base prices f.o.b. mill)

	"A" Nickel	Monel	Inconel
Sheet, CR	138	120	138
Strip, CR	124	108	138
Rod, bar, HR	107	89	109
Angles, HR	107	89	109
Plates, HR	130	110	126
Seamless tube	157	129	200
Shot, blocks	...	87	...

COPPER, BRASS, BRONZE

(Freight included in 5000 lbs)

	Sheet	Wire	Rod	Tube
Copper	54.63	.....	52.86	55.82
Brass, Yellow	48.32	48.86	48.26	51.73
Brass, Low	51.28	51.82	51.22	54.39
Brass, R L	52.33	52.87	52.27	55.64
Brass, Naval	52.90	.....	46.71	56.31
Munts Metal	50.95	.....	46.26	.....
Comm. Bz.	53.92	54.46	53.86	56.98
Mang. Bz.	56.62	.....	50.28	.....
Phos. Bz. 5%	75.34	.....	75.84	.....

Free Cutting Brass Rod..... 33.86

TITANIUM

(Base prices, f.o.b. mill)

Sheet and strip, commercially pure, $7.25-$8.50; alloy, $13.40-$17.00. Plate, HR, commercially pure, $5.25-$6.00; alloy, $8.00-$10.00. Wire, rolled and/or drawn, commercially pure, $5.75-$6.25; alloy, $7.75-$10.00; Bar, HR or forged, commercially pure, $4.25-$5.00; alloy, $4.25-$7.50; billets, HR, commercially pure, $3.55-$4.10; alloy, $3.55-$5.75.

PRIMARY METAL

(Cents per lb unless otherwise noted)

Antimony, American, Laredo, Tex.. 29.50
Beryllium Aluminum 5% Be, Dollar per lb contained Be $74.75
Beryllium copper, per lb conta'd Be. $43.00
Beryllium 97% lump or beads, f.o.b. Cleveland, Reading $71.50
Bismuth, ton lots .....$ 2.25
Cadmium, del'd .....$ 1.30
Calcium, 99.9% small lots .....$ 4.55
Chromium, 99.8% metallic base....$ 1.31
Cobalt, 97-99% (per lb)....$1.75 to $1.82
Germanium, per gm, f.o.b. Miami, Okla., refined .....33.30 to 42.00
Gold, U. S. Treas., per troy oz.....$35.00
Indium, 99.9%, dollars per troy oz..$ 2.25
Iridium, dollars per troy oz.....$75 to $85
Lithium, 98% .....$11.00 to $14.00
Magnesium sticks, 100 to 500 lb.... 59.00
Mercury, dollars per 76-lb flask f.o.b. New York .....$225 to $227
Nickel oxide sinter at Buffalo, N. Y., or other U. S. points of entry, contained nickel 69.60
Palladium, dollars per troy oz...$18 to $20
Platinum, dollars per troy oz...$77 to $80
Rhodium .....$120.00 to $125.00
Silver ingots (¢ per troy oz.).....91.375
Thorium, per kg. $43.00
Vanadium .....$ 3.45
Zirconium sponge .....$ 5.00

REMELTED METALS

Brass Ingot

(Cents per lb delivered, carloads)

85-5-5 ingot
- No. 115 ..... 29.25
- No. 120 ..... 28.00
- No. 123 ..... 27.00

80-10-10 ingot
- No. 305 ..... 33.50
- No. 315 ..... 31.50

88-10-2 ingot
- No. 210 ..... 42.00
- No. 215 ..... 37.75
- No. 245 ..... 33.50

Yellow ingot
- No. 405 ..... 23.75

Manganese bronze
- No. 421 ..... 26.75

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys
- 0.30 copper max. 25.00-25.25
- 0.60 copper max. 24.75-25.00

Piston alloys (No. 132 type)..26.75-27.75
No. 12 alum. (No. 2 grade)...23.50-24.00
108 alloy 24.00-24.50
195 alloy 26.50-27.50
13 alloy (0.60 copper max.)...24.75-25.00
AXS-679 (1 pct zinc) 23.75-24.75

(Effective Sept. 28, 1959)

Steel deoxidizing aluminum notch bar granulated or shot

Grade 1—95-97½% 24.00-25.00
Grade 2—92-95% 22.75-23.75
Grade 3—90-92% 21.75-22.75
Grade 4—85-90% 21.25-22.25

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

	Heavy	Turnings
Copper	27½	26¾
Yellow brass	20¾	18⅞
Red brass	24½	23½
Comm. bronze	25½	24½
Mang. bronze	19⅝	18½
Free cutting rod ends.	19⅞	

Customs Smelters Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	25¾
No. 2 copper wire	24¼
Light copper	22
*Refinery brass	23¾
Copper bearing material	23

*Dry copper content.

Ingot Makers Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	26½
No. 2 copper wire	24
Light copper	22
No. 1 composition	22
No. 1 comp. turnings	21½
Hvy. yellow brass solids	16
Brass pipe	15½
Radiators	16½

Aluminum

Mixed old cast.	14 —15
Mixed new clips	16½—17
Mixed turnings, dry	14½—15½

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Copper and Brass

No. 1 copper wire	23¾—24
No. 2 copper wire	21¾—22
Light copper	19¾—20
Auto radiators (unsweated)	14 —14½
No. 1 composition	18½—19
No. 1 composition turnings	17 —17½
Cocks and faucets	14¼—14¾
Clean heavy yellow brass	12¾—13¼
Brass pipe	14¼—14¾
New soft brass clippings	14¾—15¼
No. 1 brass rod turnings	12 —12½

Aluminum

Alum. pistons and struts	7½— 8
Aluminum crankcase	11¼—11¾
1100 (2s) aluminum clippings	15 —15½
Old sheet and utensils	11¼—11¾
Borings and turnings	7 — 7½
Industrial castings	11¼—11¾
2020 (24S) clippings	12½—13

Zinc

New zinc clippings	5½— 5¾
Old zinc	3¾— 4
Zinc routings	2¼— 2½
Old die cast scrap	2¼— 2½

Nickel and Monel

Pure nickel clippings	52-54
Clean nickel turnings	40
Nickel anodes	52-54
Nickel rod ends	52-54
New Monel clippings	30-32
Clean Monel turnings	20-23
Old sheet Monel	26-28
Nickel silver clippings, mixed	18
Nickel silver turnings, mixed	15

Lead

Soft scrap lead	8¾— 9¼
Battery plates (dry)	4¼— 4½
Batteries, acid free	2½— 2¾

Miscellaneous

Block tin	77 —78
No. 1 pewter	59 —60
Auto babbitt	40 —41
Mixed common babbitt	9¾—10¼
Solder joints	14 —14½
Siphon tops	42
Small foundry type	10¼—10¾
Monotype	10¼—10¾
Lino. and stereotype	9¼— 9¾
Electrotype	7¾— 8¼
Hand picked type shells	6 — 6½
Lino. and stereo. dross	2¾— 3¼
Electro dross	2¾— 3¼

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BILLETS, BLOOMS, SLABS			PILING	SHAPES STRUCTURALS			STRIP					
		Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton	Sheet Steel	Carbon	Hi Str. Low Alloy	Carbon Wide-Flange	Hot-rolled	Cold-rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot-rolled	Alloy Cold-rolled
EAST	Bethlehem, Pa.			$119.00 *B3*		5.55 *B3*	8.10 *B3*	5.55 *B5*						
	Buffalo, N. Y.	$80.00 *R3, B3*	$99.50 *R3, B3*	$119.00 *R3, B3*	6.50 *B3*	5.55 *B3*	8.10 *B3*	5.55 *B3*	5.10 *B3, R3*	7.425 *S10, R7*	7.575 *B3*			
	Phila., Pa.									7.875 *P15*				15.55 *C11*
	Harrison, N. J.													
	Conshohocken, Pa.		$104.50 *A2*	$126.00 *A2*					5.15 *A2*		7.575 *A2*			
	New Bedford, Mass.									7.875 *R6*				
	Johnstown, Pa.	$80.00 *B3*	$99.50 *B3*	$119.00 *B3*		5.55 *B3*	8.10 *B3*							
	Boston, Mass.									7.975 *T8*				
	New Haven, Conn.									7.875 *D1*				
	Baltimore, Md.									7.425 *T8*				15.90 *T8*
	Phoenixville, Pa.					5.55 *P2*		5.55 *P2*						
	Sparrows Pt., Md.								5.10 *B3*		7.575 *B3*			
	New Britain, Bridgeport, Wallingford, Conn.			$119.00 *N8*						7.875 *W1,S7*				
	Pawtucket, R. I. Worcester, Mass.									7.975 *N7, A5*				15.90 *N7* 15.70 *T8*
MIDDLE WEST	Alton, Ill.								5.30 *L1*					
	Ashland, Ky.								5.10 *A7*		7.575 *A7*			
	Canton-Massillon, Dover, Ohio		$102.00 *R3*	$119.00 *R3,* $114.00 *T5*						7.425 *G4*		10.80 *G4*		
	Chicago, Franklin Park, Evanston, Ill.	$80.00 *U1, R3*	$99.50 *U1, R3,W8*	$119.00 *U1, R3,W8*	6.50 *U1*	5.50 *U1, W8,P13*	8.05 *U1, Y1,W8*	5.50 *U1*	5.10 *W8, N4,A1*	7.525 *A1,T8, M8*	7.575 *W8*		8.40 *W8, S9,13*	15.55 *A1, S9,G4,T8*
	Cleveland, Ohio									7.425 *A5,J3*		10.75 *A5*	8.40 *J3*	
	Detroit, Mich.			$119.00 *R5*					5.10 *G3, M2*	7.425 *M2, S1, D1,P11*	7.575 *G3*	10.80 *S1*		
	Anderson, Ind.									7.425 *G4*				
	Gary, Ind. Harbor, Indiana	$80.00 *U1*	$99.50 *U1*	$119.00 *U1, Y1*		5.50 *U1, I3*	8.05 *U1, J3*	5.50 *I3*	5.10 *U1, I3,Y1*	7.425 *Y1*	7.575 *U1, I3,Y1*	10.90 *Y1*	8.40 *U1, Y1*	
	Sterling, Ill.	$80.00 *N4*				5.50 *N4*	7.75 *N4*	5.50 *N4*	5.20 *N4*					
	Indianapolis, Ind.									7.575 *R5*				15.70 *R5*
	Newport, Ky.								5.10 *A9*				8.40 *A9*	
	Niles, Warren, Ohio Sharon, Pa.		$99.50 *S1, C10*	$119.00 *C10,S1*					5.10 *R3, S1*	7.425 *R3, T4,S1*	7.575 *R3, S1*	10.80 *R3, S1*	8.40 *S1*	15.55 *S1*
	Owensboro, Ky.	$80.00 *G5*	$99.50 *G5*	$119.00 *G5*										
	Pittsburgh, Midland, Butler, Aliquippa, McKeesport, Pa.	$80.00 *U1, P6*	$99.50 *U1, C11,P6*	$119.00 *U1, C11,B7*	6.50 *U1*	5.50 *U1, J3*	8.05 *U1, J3*	5.50 *U1*	5.10 *P6*	7.425 *J3,B4* 7.525 *E3*			8.40 *S9*	15.55 *S9*
	Weirton, Wheeling, Follansbee, W. Va.				6.50 *U1, W3*	5.50 *W3*		5.50 *W3*	5.10 *W3*	7.425 *W3*	7.575 *W3*	10.80 *W3*		
	Youngstown, Ohio	$80.00 *R3*	$99.50 *Y1, C10*	$119.00 *Y1*			8.05 *Y1*		5.10 *U*	7.425 *Y1,R5*	7.575 *U1, Y1*	10.95 *Y1*	8.40 *U1, Y1*	15.55 *R5, Y1*
WEST	Fontana, Cal.	$90.50 *K1*	$109.00 *K1*	$140.00 *K1*		6.30 *K1*	8.85 *K1*	6.45 *K1*	5.825 *K1*	9.20 *K1*				
	Geneva, Utah		$99.50 *C7*			5.50 *C7*	8.05 *C7*							
	Kansas City, Mo.					5.40 *S2*	8.15 *S2*						8.65 *S2*	
	Los Angeles, Torrance, Cal.		$109.00 *B2*	$139.00 *B2*		6.20 *C7, B2*	8.75 *B2*		5.85 *C7, B2*	9.30 *C1,R5*			9.60 *B2*	17.75 *J3*
	Minnequa, Colo.					5.80 *C6*			6.20 *C6*	9.375 *C6*				
	Portland, Ore.					6.25 *O2*								
	San Francisco, Niles, Pittsburg, Cal.		$109.00 *B2*			6.15 *B2*	8.70 *B2*		5.85 *C7, B2*					
	Seattle, Wash.		$109.00 *B2*			6.25 *B2*	8.80 *B2*		6.10 *B2*					
SOUTH	Atlanta, Ga.					5.70 *A8*			5.10 *A8*					
	Fairfield, Ala. City, Birmingham, Ala.	$80.00 *T2*	$99.50 *T2*			5.50 *T2 R3,C16*	8.05 *T2*		5.10 *T2, R3,C16*		7.575 *T2*			
	Houston, Lone Star, Texas		$104.50 *S2*	$124.00 *S2*		5.60 *S2*	8.15 *S2*						8.65 *S2*	

(Effective Sept. 28, 1959)

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		SHEETS									WIRE ROD	TINPLATE†		
		Hot-rolled *18* ga. & hvyr.	Cold-rolled	Galvanized (Hot-dipped)	Enameling	Long Terne	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.		Cokes* *1.25*-lb. base box	Electro** *0.25*-lb. base box	Holloware Enameling *29* ga.
EAST	Buffalo, N. Y.	5.10 *B3*	6.275 *B3*				7.525 *B3*	9.275 *B3*		6.40 *W6*	† Special coated mfg. terne deduct 35¢ from 1.25-lb. coke base box price, 0.75 lb./0.25 lb. add 55¢. Can-making quality BLACKPLATE 55 to 128 lb. deduct $2.20 from 1.25 lb. coke base box. * COKES: 1.50-lb. add 25¢. **ELECTRO: 0.50-lb. add 25¢; 0.75-lb. add 65¢; 1.00-lb. add $1.00. Differential 1.00 lb./0.25 lb. add 65¢.		
	Claymont, Del.												
	Coatesville, Pa.												
	Conshohocken, Pa.	5.15 *A2*	6.325 *A2*				7.575 *A2*						
	Harrisburg, Pa.												
	Hartford, Conn.												
	Johnstown, Pa.									6.40 *B3*			
	Fairless, Pa.	5.15 *U1*	6.325 *U1*				7.575 *U1*	9.325 *U1*			$10.50 *U1*	$9.20 *U1*	
	New Haven, Conn.												
	Phoenixville, Pa.												
	Sparrows Pt., Md.	5.10 *B3*	6.275 *B3*	6.875 *B3*			7.525 *B3*	9.275 *B3*	10.025 *B3*	6.50 *B3*	$10.40 *B3*	$9.10 *B3*	
	Worcester, Mass.									6.70 *A5*			
	Trenton, N. J.												
MIDDLE WEST	Alton, Ill.									6.60 *L1*			
	Ashland, Ky.	5.10 *A7*		6.875 *A7*	6.775 *A7*		7.525 *A7*						
	Canton-Massillon, Dover, Ohio			6.875 *R1, R3*									
	Chicago, Joliet, Ill.	5.10 *W8, A1*					7.525 *U1, W8*			6.40 *A5, R3, W8*			
	Sterling, Ill.									6.50 *N4, K2*			
	Cleveland, Ohio	5.10 *R3, J3*	6.275 *R3, J3*	7.65 *R3**	6.775 *R3*		7.525 *R3, J3*	9.275 *R3, J3*		6.40 *A5*			
	Detroit, Mich.	5.10 *G3, M2*	6.275 *G3, M2*				7.525 *G3*	9.275 *G3*					
	Newport, Ky.	5.10 *A9*	6.275 *A9*										
	Gary, Ind. Harbor, Indiana	5.10 *U1, I3, Y1*	6.275 *U1, I3, Y1*	6.875 *U1, I3*	6.775 *U1, I3, Y1*	7.225 *U1*	7.525 *U1, Y1, I3*	9.275 *U1, Y1*		6.40 *Y1*	$10.40 *U1, Y1*	$9.10 *I3, U1, Y1*	7.85 *U1, Y1*
	Granite City, Ill.	5.20 *G2*	6.375 *G2*	6.975 *G2*	6.875 *G2*							$9.20 *G2*	7.95 *G2*
	Kokomo, Ind.			6.975 *C9*						6.50 *C9*			
	Mansfield, Ohio	5.10 *E2*	6.275 *E2*			7.225 *E2*							
	Middletown, Ohio		6.275 *A7*	6.875 *A7*	6.775 *A7*	7.225 *A7*							
	Niles, Warren, Ohio Sharon, Pa.	5.10 *R3, S1*	6.275 *R3*	6.875 *R3* 7.65 *R3**	6.775 *S1*	7.225 *S1**, *R3*	7.525 *R3, S1*	9.275 *R3,*				$9.10 *R3*	
	Pittsburgh, Midland, Butler, Donora, Aliquippa, McKeesport, Pa.	5.10 *U1, J3, P6*	6.275 *U1, J3, P6*	6.875 *U1, J3* 7.50 *E3**	6.775 *U1*		7.525 *U1, J3*	9.275 *U1, J3*	10.025 *U1, J3*	6.40 *A5, J3, P6*	$10.40 *U1, J3*	$9.10 *U1, J3*	7.85 *U1, J3*
	Portsmouth, Ohio	5.10 *P7*	6.275 *P7*							6.40 *P7*			
	Weirton, Wheeling, Follansbee, W. Va.	5.10 *W3, W5*	6.275 *W3, F3, W5*	6.875 *W3, W5* 7.50 *W3**		7.225 *W3, W5*	7.525 *W3*	9.275 *W3*			$10.40 *W5, W3*	$9.10 *W5,* * *W3*	7.85 *W5*
	Youngstown, Ohio	5.10 *U1, Y1*	6.275 *Y1*	7.50 *J3**	6.775 *Y1*		7.525 *Y1*	9.275 *Y1*		6.40 *Y1*			
WEST	Fontana, Cal.	5.825 *K1*	7.40 *K1*				8.25 *K1*	10.40 *K1*			$11.05 *K1*	$9.75 *K1*	
	Geneva, Utah	5.20 *C7*											
	Kansas City, Mo.									6.65 *S2*			
	Los Angeles, Torrance, Cal.									7.20 *B2*			
	Minnequa, Colo.									6.65 *C6*			
	San Francisco, Niles, Pittsburg, Cal.	5.80 *C7*	7.225 *C7*	7.625 *C7*						7.20 *C7*	$11.05 *C7*	$9.75 *C7*	
SOUTH	Atlanta, Ga.												
	Fairfield, Ala. Alabama City, Ala.	5.10 *T2, R3*	6.275 *T2, R3*	6.875 *T2, R3*	6.775 *T2*					6.40 *T2, R3*	$10.50 *T2*	$9.20 *T2*	
	Houston, Texas									6.65 *S2*			

*Electrogalvanized sheets.

(Effective Sept. 28, 1959)

*7.425 at Sharon-Niles is 7.225

IRON AGE

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BARS						PLATES				WIRE
		Carbon† Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfr's. Bright
EAST	Bethlehem, Pa.				6.725 *B3*	9.025 *B3*	8.30 *B3*					
	Buffalo, N. Y.	5.975 *R3,B3*	5.675 *R3,B3*	7.70 *B5*	6.725 *B3,R3*	9.025 *B3,B5*	8.30 *B3*	5.30 *B3*				8.00 *W6*
	Claymont, Del.							5.30 *C4*		7.50 *C4*	7.95 *C4*	
	Coatesville, Pa.							5.30 *L4*		7.50 *L4*	7.95 *L4*	
	Conshohocken, Pa.							5.30 *A2*	6.375 *A2*	7.50 *A2*	7.95 *A2*	
	Harrisburg, Pa.							5.30 *P2*	6.375 *P2*			
	Milton, Pa.	5.825 *M7*	5.825 *M7*									
	Hartford, Conn.			8.15 *R3*		9.325 *R3*						
	Johnstown, Pa.	5.675 *B3*	5.675 *B3*		6.725 *B3*		8.30 *B3*	5.30 *B3*		7.50 *B3*	7.95 *B3*	8.00 *B3*
	Fairless, Pa.	5.825 *U1*	5.825 *U1*		6.875 *U1*							
	Newark, Camden, N. J.			8.10 *W10, P10*		9.20 *W10, P10*						
	Bridgeport, Putnam, Willimantic, Conn.			8.20 *W10* 8.15 *J3*	6.80 *N8*	9.175 *N8*						
	Sparrows Pt., Md.		5.675 *B3*					5.30 *B3*		7.50 *B3*	7.95 *B3*	8.10 *B3*
	Palmer, Worcester, Readville, Mansfield, Mass.			8.20 *B5, C14*		9.525 *A5,B5*						8.30 *A5, W6*
	Spring City, Pa.			8.10 *K4*		9.20 *K4*						
MIDDLE WEST	Alton, Ill.	5.875 *L1*										8.20 *L1*
	Ashland, Newport, Ky.							5.30 *A7,A9*		7.50 *A9*	7.95 *A7*	
	Canton, Massillon, Mansfield, Ohio	6.15* *R3*		7.65 *R3,R2*	6.725 *R3* 6.475 *T5*	9.025 *R3,R2* 8.775 *T5*		5.30 *E2*				
	Chicago, Joliet, Waukegan, Madison, Harvey, Ill.	5.675 *U1,R3, W8,N4,P13*	5.675 *U1,R3, N4,P13,W8* 5.875*L1*	7.65 *A5, W10,W8, B5,L2,N9*	6.725 *U1,R3, W8*	9.025 *A5, W10,W8, L2,N8,B5*	8.30 *U1,W8, R3*	5.30 *U1,A1, W8,I3*	6.375 *U1*	7.50 *U1, W8*	7.95 *U1, W8*	8.00 *A5,R3, W8,N4, K2,W7*
	Cleveland, Elyria, Ohio	5.675 *R3*	5.675 *R3*	7.65 *A5,C13, C18*		9.025 *A5, C13,C18*	8.30 *R3*	5.30 *R3,J3*	6.375 *J3*		7.95 *R3,J3*	8.00 *A5, C13,C18*
	Detroit, Mich.	5.675 *G3*	5.675 *G3*	7.90 *P3* 7.85 *P8,B5* 7.65 *R5*	6.725 *R5,G3*	9.025 *R5* 9.225 *B5,P3, P8*	8.30 *G3*	5.30 *G3*		7.50 *G3*	7.95 *G3*	
	Duluth, Minn.											8.00 *A5*
	Gary, Ind. Harbor, Crawfordsville, Hammond, Ind.	5.675 *U1,I3, Y1*	5.675 *U1,I3, Y1*	7.65 *R3,J3*	6.725 *U1,I3, Y1*	9.025 *R3,M4*	8.30 *U1,Y1*	5.30 *U1,I3, Y1*	6.375 *J3, I1*	7.50 *U1, Y1*	7.95 *U1, Y1,I3*	8.10 *M4*
	Granite City, Ill.							5.40 *G2*				
	Kokomo, Ind.		5.775 *C9*									8.10 *C9*
	Sterling, Ill.	5.775 *N4*	5.775 *N4*					5.30 *N4*				8.10 *K2*
	Niles, Warren, Ohio Sharon, Pa.			7.65 *C10*	6.725 *C10,*	9.025 *C10*		5.30 *R3,S1*		7.50 *S1*	7.95 *R3, S1*	
	Owensboro, Ky.	5.675 *G5*			6.725 *G5*							
	Pittsburgh, Midland, Donora, Aliquippa, Pa.	5.675 *U1,J3*	5.675 *U1,J3*	7.65 *A5,B4, R3,J3,C11, W10,S9,C8, M9*	6.725 *U1,J3, C11,B7*	9.025 *A5, W10,R3,S9, C11,C8,M9*	8.30 *U1,J3*	5.30 *U1,J3*	6.375 *U1,J3*	7.50 *U1, J3,B7*	7.95 *U1, J3,B7*	8.00 *A5, J3,P6*
	Portsmouth, Ohio											8.00 *P7*
	Weirton, Wheeling, Follansbee, W. Va.							5.30 *W5*				
	Youngstown, Ohio	5.675 *U1,R3, Y1*	5.675 *U1,R3, Y1*	7.65 *A1,Y1, F2*	6.725 *U1,Y1*	9.025 *Y1,F2*	8.30 *U1,Y1*	5.30 *U1, R3,Y1*		7.50 *Y1*	7.95 *U1,Y1*	8.00 *Y1*
WEST	Emeryville, Fontana, Cal.	6.425 *J5* 6.375 *K1*	6.425 *J5* 6.375 *K1*		7.775 *K1*		9.00 *K1*	6.10 *K1*		8.30 *K1*	8.75 *K1*	
	Geneva, Utah							5.30 *C7*			7.95 *C7*	
	Kansas City, Mo.	5.925 *S2*	5.925 *S2*		6.975 *S2*		8.55 *S2*					8.25 *S2*
	Los Angeles, Torrance, Cal.	6.375 *C7,B2*	6.375 *C7,B2*	9.10 *R3,P14, S12*	7.775 *B2*	11.00 *P14, S12*	8.625 *B2*					8.95 *B2*
	Minnequa, Colo.	6.125 *C6*	6.125 *C6*					6.15 *C6*				8.25 *C6*
	Portland, Ore.	6.425 *O2*	6.425 *O2*									
	San Francisco, Niles, Pittsburg, Cal.	6.375 *C7* 6.425 *B2*	6.375 *C7* 6.425 *B2*				8.675 *B2*					8.95 *C7,C6*
	Seattle, Wash.	6.425 *B2,N6, A10*	6.425 *B2,A10*				8.675 *B2*	6.20 *B2*		8.40 *B2*	8.85 *B2*	
SOUTH	Atlanta, Ga.	5.875 *A8*	5.675 *A8*									8.00 *A8*
	Fairfield City, Ala. Birmingham, Ala.	5.675 *T2,R3, C16*	5.675 *T2,R3, C16*	8.25 *C16*			8.30 *T2*	5.30 *T2,R3*			7.95 *T2*	8.00 *T2,R3*
	Houston, Ft. Worth, Lone Star, Texas	5.925 *S2*	5.925 *S2*		6.975 *S2*		8.55 *S2*	5.40 *S2*		7.60 *S2*	8.05 *S2*	8.25 *S2*

† Merchant Quality—Special Quality 35¢ higher. (Effective Sept. 28, 1959) * Special Quality.

STEEL PRICES

Key to Steel Producers

With Principal Offices

A1 Acme Steel Co., Chicago
A2 Alan Wood Steel Co., Conshohocken, Pa.
A3 Allegheny Ludlum Steel Corp., Pittsburgh
A4 American Cladmetals Co., Carnegie, Pa.
A5 American Steel & Wire Div., Cleveland
A6 Angel Nail & Chaplet Co., Cleveland
A7 Armco Steel Corp., Middletown, Ohio
A8 Atlantic Steel Co., Atlanta, Ga.
A9 Acme-Newport Steel Co., Newport, Ky.
A10 Alaska Steel Mills, Inc., Seattle, Wash.

B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.
B2 Bethlehem Steel Co., Pacific Coast Div.
B3 Bethlehem Steel Co., Bethlehem, Pa.
B4 Blair Strip Steel Co., New Castle, Pa.
B5 Bliss & Laughlin, Inc., Harvey, Ill.
B6 Brook Plant, Wickwire-Spencer Steel Div., Birdsboro, Pa.
B7 A. M. Byers, Pittsburgh
B8 Braeburn Alloy Steel Corp., Braeburn, Pa.

C1 Calstrip Steel Corp., Los Angeles
C2 Carpenter Steel Co., Reading, Pa.
C4 Claymont Products Dept., Claymont, Del.
C6 Colorado Fuel & Iron Corp., Denver
C7 Columbia Geneva Steel Div., San Francisco
C8 Columbia Steel & Shafting Co., Pittsburgh
C9 Continental Steel Corp., Kokomo, Ind.
C10 Copperweld Steel Co., Pittsburgh, Pa.
C11 Crucible Steel Co. of America, Pittsburgh
C13 Cuyahoga Steel & Wire Co., Cleveland
C14 Compressed Steel Shafting Co., Readville, Mass.
C15 G. O. Carlson, Inc., Thorndale, Pa.
C16 Connors Steel Div., Birmingham
C18 Cold Drawn Steel Plant, Western Automatic Machine Screw Co., Elyria, O.

D1 Detroit Steel Corp., Detroit
D2 Driver, Wilbur B., Co., Newark, N. J.
D3 Driver Harris Co., Harrison, N. J.
D4 Dickson Weatherproof Nail Co., Evanston, Ill.

E1 Eastern Stainless Steel Corp., Baltimore
E2 Empire-Reeves Steel Corp., Mansfield, O.
E3 Enamel Products & Plating Co., McKeesport, Pa.

F1 Firth Sterling, Inc., McKeesport, Pa.
F2 Fitzsimons Steel Corp., Youngstown
F3 Follansbee Steel Corp., Follansbee, W. Va.

G2 Granite City Steel Co., Granite City, Ill.
G3 Great Lakes Steel Corp., Detroit
G4 Greer Steel Co., Dover, O.
G5 Green River Steel Corp., Owensboro, Ky.

H1 Hanna Furnace Corp., Detroit

I2 Ingersoll Steel Div., New Castle, Ind.
I3 Inland Steel Co., Chicago, Ill.
I4 Interlake Iron Corp., Cleveland

J1 Jackson Iron & Steel Co., Jackson, O.
J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mfg. & Supply Co., Chicago
J5 Judson Steel Corp., Emeryville, Calif.

K1 Kaiser Steel Corp., Fontana, Calif.
K2 Keystone Steel & Wire Co., Peoria
K4 Keystone Drawn Steel Co., Spring City, Pa.

L1 Laclede Steel Co., St. Louis
L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens Steel Co., Coatesville, Pa.

M1 Mahoning Valley Steel Co., Niles, O.
M2 McLouth Steel Corp., Detroit
M3 Mercer Tube & Mfg. Co., Sharon, Pa.
M4 Mid States Steel & Wire Co., Crawfordsville, Ind.
M6 Mystic Iron Works, Everett, Mass.
M7 Milton Steel Products Div., Milton, Pa.
M8 Mill Strip Products Co., Chicago, Ill.
M9 Moltrup Steel Products Co., Beaver Falls, Pa.

N1 National Supply Co., Pittsburgh
N2 National Tube Div., Pittsburgh
N4 Northwestern Steel & Wire Co., Sterling, Ill.
N6 Northwest Steel Rolling Mills, Seattle
N7 Newman Crosby Steel Co., Pawtucket, R. I.
N8 Carpenter Steel of New England, Inc., Bridgeport, Conn.
N9 Nelson Steel & Wire Co.

O1 Oliver Iron & Steel Co., Pittsburgh
O2 Oregon Steel Mills, Portland

P1 Page Steel & Wire Div., Monessen, Pa.
P2 Phoenix Steel Corp., Phoenixville, Pa.
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
P4 Pittsburgh Coke & Chemical Co., Pittsburgh
P5 Pittsburgh Screw & Bolt Co., Pittsburgh
P6 Pittsburgh Steel Co., Pittsburgh
P7 Portsmouth Div., Detroit Steel Corp., Detroit
P8 Plymouth Steel Co., Detroit
P9 Pacific States Steel Co., Niles, Cal.
P10 Precision Drawn Steel Co., Camden, N. J.
P11 Production Steel Strip Corp., Detroit
P13 Phoenix Mfg. Co., Joliet, Ill.
P14 Pacific Tube Co.
P15 Philadelphia Steel and Wire Corp.

R1 Reeves Steel & Mfg. Div., Dover, O.
R2 Reliance Div., Eaton Mfg. Co., Massillon, O.
R3 Republic Steel Corp., Cleveland
R4 Roebling Sons Co., John A., Trenton, N. J.
R5 Jones & Laughlin Steel Corp., Stainless and Strip Div.
R6 Rodney Metals, Inc., New Bedford, Mass.
R7 Rome Strip Steel Co., Rome, N. Y.

S1 Sharon Steel Corp., Sharon Pa.
S2 Sheffield Steel Div., Kansas City
S3 Shenango Furnace Co., Pittsburgh
S4 Simonds Saw and Steel Co., Fitchburg, Mass.
S5 Sweet's Steel Co., Williamsport, Pa.
S7 Stanley Works, New Britain, Conn.
S8 Superior Drawn Steel Co., Monaca, Pa.
S9 Superior Steel Div. of Copperweld Steel Co., Carnegie, Pa.
S10 Seneca Steel Service, Buffalo
S11 Southern Electric Steel Co., Birmingham
S12 Sierra Drawn Steel Corp., Los Angeles, Calif.
S13 Seymour Mfg. Co., Seymour, Conn.

T1 Tonawanda Iron Div., N. Tonawanda, N. Y.
T2 Tennessee Coal & Iron Div., Fairfield
T3 Tennessee Products & Chem. Corp., Nashville
T4 Thomas Strip Div., Warren, O.
T5 Timken Steel & Tube Div., Canton, O.
T7 Texas Steel Co., Fort Worth
T8 Thompson Wire Co., Boston

U1 United States Steel Corp., Pittsburgh
U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.
U3 Ulbrich Stainless Steels, Wallingford, Conn.
U4 U. S. Pipe & Foundry Co., Birmingham

W1 Wallingford Steel Co., Wallingford, Conn.
W2 Washington Steel Corp., Washington, Pa.
W3 Weirton Steel Co., Weirton, W. Va.
W4 Wheatland Tube Co., Wheatland, Pa.
W5 Wheeling Steel Corp., Wheeling, W. Va.
W6 Wickwire Spencer Steel Div., Buffalo
W7 Wilson Steel & Wire Co., Chicago.
W8 Wisconsin Steel Div., S. Chicago, Ill.
W9 Woodward Iron Co., Woodward, Ala.
W10 Wyckoff Steel Co., Pittsburgh
W12 Wallace Barnes Steel Div., Bristol, Conn.

Y1 Youngstown Sheet & Tube Co., Youngstown, O.

PIPE AND TUBING

Base discounts (pct) f.o.b. mills. Base price about $200 per net ton.

	BUTTWELD														SEAMLESS							
	½ In.		¾ In.		1 In.		1¼ In.		1½ In.		2 In.		2½–3 In.		2 In.		2½ In.		3 In.		3½–4 In.	
STANDARD T. & C.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
Sparrows Pt. *B3*	8.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50								
Youngstown *R3*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Fontana *K1*	*10.75	*26.00	*7.75	*22.00	*4.25	*17.50	*1.75	*16.75	*1.25	*15.75	*0.75	*15.25	0.75	*15.50								
Pittsburgh *J3*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
Alton, Ill. *L1*	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50								
Sharon *M3*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Fairless *N2*	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50								
Pittsburgh *N1*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
Wheeling *W5*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Wheatland *W4*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Youngstown *Y1*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
Indiana Harbor *Y1*	1.25	*14.0	4.25	*10.0	7.75	*5.50	10.25	*4.75	10.75	*3.75	11.25	*3.25	12.75	*3.50								
Lorain *N2*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
EXTRA STRONG PLAIN ENDS																						
Sparrows Pt. *B3*	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50								
Youngstown *R3*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Fairless *N2*	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50								
Fontana *K1*	*6.25		*2.25		0.75		1.25		1.75		2.25		2.75									
Pittsburgh *J3*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50
Alton, Ill. *L1*	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50								
Sharon *M3*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Pittsburgh *N1*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50
Wheeling *W5*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Wheatland *W4*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Youngstown *Y1*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50
Indiana Harbor *Y1*	5.75	*8.0	9.75	*4.0	12.75	0.50	13.25	*0.75	13.75	0.25	14.25	0.75	14.75	*0.50								
Lorain *N2*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50

Threads only, buttweld and seamless, 2¼ pt. higher discount. Plain ends, buttweld and seamless, 3-in. and under, 5½ pt. higher discount.
Galvanized discounts based on zinc price range of over 9¢ to 11¢ per lb. East St. Louis. For each 2¢ change in zinc, discounts vary as follows: ½, ¾ and 1-in., 2 pt.; 1¼, 1½ and 2-in., 1½ pt.; 2½ and 3-in., 1 pt., e.g., zinc price range of over 13¢ to 15¢ would lower discounts on 2½ and 3-in. pipe by 2 points; zinc price in range over 7¢ to 9¢ would increase discounts. East St. Louis zinc price now 11.00¢ per lb.

(Effective Sept. 28, 1959)

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	per lb	SAE
18	4	1	—	—	$1.84	T-1
18	4	1	—	5	2.545	T-4
18	4	2	—	—	2.005	T-2
1.5	4	1.5	8	—	1.20	M-1
6	4	3	6	—	1.59	M-3
6	4	2	5	—	1.345	M-2
High-carbon chromium..					.955	D-3, D-5
Oil hardened manganese					.505	O-2
Special carbon					.38	W-1
Extra carbon					.38	W-1
Regular carbon					.325	W-1

Warehouse prices on and east of Mississippi are 4¢ per lb higher. West of Mississippi, 6¢ higher.

CLAD STEEL

Base prices, cents per lb f.o.b.

	Cladding	Plate (*L4, C4, A3, J2*) 10 pct	15 pct	20 pct	Sheet (*I2*) 20 pct
Stainless Type	302	.....	.....	.....	37.50
	304	28.80	31.55	34.30	40.00
	316	42.20	46.25	50.25	58.75
	321	34.50	37.75	41.05	47.25
	347	40.80	44.65	48.55	57.00
	405	24.60	26.90	29.25	.....
	410	22.70	24.85	27.00	.....
	430	23.45	25.65	27.90	.....

CR Strip (S9) Copper, 10 pct, 2 sides, 42.50; 1 side, 35.85.

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Tie Plates	Track Bolts Untreated
Bessemer *U1*	5.75	6.725	7.25	.....	.....	.....
Cleveland *R3*	.....	.....	.....	.....	.....	15.35
So. Chicago *R3*	.....	.....	.....	10.10	.....	.....
Ensley *T2*	5.75	6.725	.....	.....	.....	.....
Fairfield *T2*	.....	6.725	.....	10.10	6.875	.....
Gary *U1*	5.75	.....	.....	.....	6.875	.....
Huntington, *C16*	.....	6.725	.....	.....	.....	.....
Ind. Harbor *I3*	.....	.....	.....	10.10	.....	.....
Johnstown *B3*	.....	6.725	.....	.....	.....	.....
Joliet *U1*	.....	.....	7.25	.....	.....	.....
Kansas City *S2*	.....	.....	.....	10.10	.....	15.35
Lackawanna *B3*	5.75	6.725	7.25	.....	6.875	.....
Lebanon *B3*	.....	.....	7.25	.....	.....	15.35
Minnequa *C6*	5.75	7.225	7.25	10.10	6.875	15.35
Pittsburgh *P5*	.....	.....	.....	.....	.....	14.75
Pittsburgh *J3*	.....	.....	.....	10.10	.....	.....
Seattle *B2*	.....	.....	.....	.....	6.75	15.85
Steelton *B3*	5.75	.....	7.25	.....	6.875	.....
Struthers *Y1*	.....	.....	.....	10.10	.....	.....
Torrance *C7*	.....	.....	.....	.....	6.75	.....
Williamsport *S5*	.....	6.725	.....	.....	.....	.....
Youngstown *R3*	.....	.....	.....	10.10	.....	.....

COKE

	Net-Ton
Furnace, beehive (f.o.b.) Connellsville, Pa.	$14.50 to $15.50
Foundry, beehive (f.o.b.)	$18.50
Foundry oven coke	
Buffalo, del'd	$33.25
Detroit f.o.b.	32.00
New England, del'd	33.55
New Haven, f.o.b.	31.00
Kearney, N. J., f.o.b.	31.25
Philadelphia, f.o.b.	31.00
Swedeland, Pa., f.o.b.	31.00
Painesville, Ohio, f.o.b.	34.35
Erie, Pa., f.o.b.	32.00
Cleveland, del'd	34.19
Cincinnati, del'd	32.84
St. Paul, f.o.b.	31.25
St. Louis, f.o.b.	33.00
Birmingham, f.o.b.	30.35
Milwaukee, f.o.b.	32.00
Neville Is., Pa.	30.75

LAKE SUPERIOR ORES

51.50% Fe natural, delivered lower Lake ports. Interim prices for 1959 season. Freight changes for seller's account.

	Gross Ton
Openhearth lump	$12.70
Old range, bessemer	11.85
Old range, nonbessemer	11.70
Mesabi, bessemer	11.60
Mesabi, nonbessemer	11.45
High phosphorus	11.45

ELECTRICAL SHEETS

22-Gage F.o.b. Mill Cents Per Lb	Hot-Rolled (Cut Lengths)*	Cold-Reduced (Coiled or Cut Length) Semi-Processed	Fully Processed
Field	.....	9.875	.....
Armature	11.70	11.20	11.70
Elect.	12.40	11.90	12.40
Special Motor	.....	12.475	.....
Motor	13.55	13.05	13.55
Dynamo	14.65	14.15	14.65
Trans. 72	15.70	15.20	15.70
Trans. 65	16.30		
		Grain Oriented	
Trans. 58	16.80	Trans. 80	19.70
Trans. 52	17.85	Trans. 73	20.20
		Trans. 66	20.70

Producing points: Aliquippa (*J3*); Beech Bottom (*W5*); Brackenridge (*A3*); Granite City (*G2*); Indiana Harbor (*I3*); Mansfield (*E2*); Newport, Ky. (*A9*); Niles, O. (*S1*); Vandergrift (*U1*); Warren, O. (*R3*); Zanesville, Butler (*A7*).

ELECTRODES

Cents per lb. f.o.b. plant, threaded, with nipples, unboxed.

GRAPHITE Diam. (In.)	Length (In.)	Price	CARBON* Diam. (In.)	Length (In.)	Price
24	84	27.25	40	100,110	12.50
20	72	26.50	35	110	11.20
18	72	27.50	30	110	11.70
14	72	27.25	24	72	11.95
12	72	28.25	20	90	11.55
10	60	29.50	17	72	12.10
10	48	30.00	14	72	12.55
7	60	29.75	10	60	13.80
6	60	33.25	8	60	14.25
4	40	37.00			
3	40	39.25			
2½	30	41.50			
2	24	64.00			

* Prices shown cover carbon nipples.

REFRACTORIES

Fire Clay Brick

Carloads per 1000

Super duty, Mo., Pa., Md., Ky....	$185.00
High duty (except Salina, Pa., add $5.00)	140.00
Medium duty	125.00
Low duty (except Salina, Pa., add $2.00)	103.00
Ground fire clay, net ton, bulk...	22.50

Silica Brick

Mt. Union, Pa., Ensley, Ala.	$158.00
Childs, Hays, Latrobe, Pa.	163.00
Chicago District	168.00
Western Utah	183.00
California	165.00
Super Duty Hays, Pa., Athens, Tex., Windham, Warren, O., Morrisville	163.00-168.00
Silica cement, net ton, bulk, Latrobe	29.75
Silica cement, net ton, bulk, Chicago	26.75
Silica cement, net ton, bulk, Ensley, Ala.	27.75
Silica cement, net ton, bulk, Mt. Union	25.75
Silica cement, net ton, bulk, Utah and Calif.	39.00

Chrome Brick

Per net ton

Standard chemically bonded, Balt.	$109.00
Standard chemically bonded, Curtiner, Calif.	119.00
Burned, Balt.	103.00

Magnesite Brick

Standard, Baltimore	$140.00
Chemically bonded, Baltimore	119.00

Grain Magnesite

St. ⅜ to ½-in. grains

Domestic, f.o.b. Baltimore in bulk.	$73.00
Domestic, f.o.b. Chewalah, Wash., Luning, Nev. in bulk	46.00
in sacks	52.00-54.00

Dead Burned Dolomite

Per net ton

F.o.b. bulk, producing points in: Pa., W. Va., Ohio	$16.75
Missouri Valley	15.60
Midwest	17.00

(Effective Sept. 28, 1959)

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard Q Coated Nails	Woven Wire Fence	"T" Fence Posts	Single Loop Bale Ties	Galv. Barbed and Twisted Barbless Wire	Merch. Wire Ann'ld	Merch. Wire Galv.
	Col	Col	Col	Col	Col	¢/lb.	¢/lb.
Alabama City *R3*	173	187	...	212	193	9.00	9.55
Aliquippa *J3****	173	190	...	...	190	9.00	9.675
Atlanta *A8***	175	192	...	214	198	8.75	9.425
Bartonville *K2***	175	192	178	214	198	9.10	9.775
Buffalo *W6*	.....	.....	.....	.....	.....	9.00	9.55*
Chicago *N4***...	177	190	172	212	196	9.00	9.70
Chicago *R3*	.....	.....	.....	.....	.....	9.00	9.55
Cleveland *A6*	.....	.....	.....	.....	.....	.....	.....
Cleveland *A5*	.....	.....	.....	.....	.....	9.00	.....
Crawf'dsv. *M4***	175	192	...	214	198	9.10	9.775
Donora, Pa. *A5*	173	187	...	212	193	9.00	9.55
Duluth *A5*	173	187	...	212	193	9.00	9.55
Fairfield, Ala. *T2*	173	187	...	212	193	9.00	9.55
Galveston *D4*	9.10‡	.....	.....	.....	.....	.....	.....
Houston *S2*	178	192	...	217	198	9.25	9.80†
Jacksonville *M4*	184-1	197	...	219	203	9.10	9.775
Johnstown *B3***	173	190	17.	...	196	9.00	9.675
Joliet, Ill. *A5*	173	187	...	212	193	9.00	9.55
Kokomo *C9*	175	189	...	214	195*	9.10	9.65*
L. Angeles *B2****	.....	.....	.....	.....	.....	9.95	10.625
Kansas City *S2**	178	192	...	217	198*	9.25	9.80†
Minnequa *C6*	178	192	182	217	198†	9.25	9.80†
Monessen *P6*	.....	.....	.....	.....	193	8.65	9.325
Palmer, Mass. *W6*	.....	.....	.....	.....	.....	9.30	9.85*
Pittsburg, Cal. *C7*	192	210	.....	.....	213	9.60	10.15
Rankin, Pa. *A5*	173	187	.....	.....	193	9.00	9.55
So. Chicago *R3*	173	187	.....	.....	193	8.65	9.20
S. San Fran. *C6*	.....	.....	.....	236	.....	9.95	10.50†
Sparrows Pt. *B3***	175	.....	.....	214	198	9.10	9.775
Struthers, O. *Y1**	.....	.....	.....	.....	.....	8.65	9.20
Worcester *A5*	179	.....	.....	.....	.....	9.30	9.85
Williamsport *S5*	.....	.....	.....	.....	.....	.....	.....

* Zinc less than .10¢. *** .10¢ zinc.
** 11-12¢ zinc. † Plus zinc extras.
‡ Wholesalers only.

C-R SPRING STEEL

Cents Per Lb F.o.b. Mill	CARBON CONTENT 0.26-0.40	0.41-0.60	0.61-0.80	0.81-1.05	1.06-1.35
Anderson, Ind. *C4*	8.95	10.40	12.60	15.60	18.55
Baltimore, Md. *T8*	9.50	10.70	12.90	15.90	18.85
Bristol, Conn. *W12*	.....	10.70	12.90	16.10	19.30
Boston *T8*	9.50	10.70	12.90	15.90	18.85
Buffalo, N. Y. *R7*	8.95	10.40	12.60	15.60	18.55
Carnegie, Pa. *S9*	8.95	10.40	12.60	15.60	18.55
Chicago	.....	.....	.....	15.60	.....
Cleveland *A5*	8.95	10.40	12.60	15.60	18.55
Dearborn *S1*	9.05	10.50	12.70	.....	.....
Detroit *D1*	9.05	10.50	12.70	15.70	.....
Detroit *D2*	9.05	10.50	12.70	.....	.....
Dover, O. *C4*	8.95	10.40	12.60	15.60	18.55
Evanston, Ill. *M8*	9.05	10.40	12.60	.....	.....
Franklin Park, Ill. *T8*	9.05	10.40	12.60	15.60	18.55
Harrison, N. J. *C11*	.....	.....	12.90	16.10	19.30
Indianapolis *R5*	9.10	10.55	12.60	15.60	18.55
Los Angeles *C1*	11.15	12.60	14.80	17.80	.....
New Britain, Conn. *S7*	9.40	10.70	12.90	15.90	18.85
New Castle, Pa. *B4*	8.95	10.40	12.60	15.60	.....
New Haven, Conn. *D1*	9.40	10.70	12.90	15.90	.....
Pawtucket, R. I. *N7*	9.50	10.70	12.90	15.90	18.85
Riverdale, Ill. *A1*	9.05	10.40	12.60	15.60	18.55
Sharon, Pa. *S1*	8.95	10.40	12.60	15.60	18.55
Trenton, *R4*	.....	10.70	12.90	16.10	19.30
Wallingford *W1*	9.40	10.70	12.90	15.90	18.55
Warren, Ohio *T4*	8.95	10.40	12.60	15.60	18.75
Worcester, Mass. *A5*	9.50	10.70	12.90	15.90	18.85
Youngstown *R5*	9.10	10.55	12.60	15.60	18.55

BOILER TUBES

$ per 100 ft. carload lots cut 10 to 24 ft. F.o.b. Mill	Size OD-In.	B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
Babcock & Wilcox..	2	13	40.28	47.21	35.74
	2½	12	54.23	63.57	48.13
	3	12	62.62	73.40	55.59
	3½	11	73.11	85.70	65.84
	4	10	97.08	113.80	88.10
National Tube.....	2	13	40.28	47.21	35.74
	2½	12	54.23	63.57	48.13
	3	12	62.62	73.40	55.59
	3½	11	73.11	85.70	65.84
	4	10	97.08	113.80	88.10
Pittsburgh Steel...	2	13	40.28	47.21	.....
	2½	12	54.23	63.57	.....
	3	12	62.62	73.40	.....
	3½	11	73.11	85.70	.....
	4	10	97.08	113.80	.....

METAL POWDERS

Cents per lb, minimum truckload, delivered E. of Miss. River, unless otherwise noted.

Iron Powders

Compacting Powders

Electrolytic, imported, f.o.b.	29.50 to 33.00
Electrolytic, domestic	34.50
Sponge	11.25
Atomized	11.25
Hydrogen Reduced	11.25 to 12.00
Carbonyl	88.00
Welding Powders*	8.10
Cutting and Scarfing Powders*	9.10

Copper Powders

Electrolytic, domestic	41.00
Precipitated	40.50 to 45.00
Atomized	39.80 to 48.30
Hydrogen reduced, f.o.b.	43.25
Bronze	47.20 to 51.50
Chromium, electrolytic	$5.00
Lead	19.00
Manganese, f.o.b.	42.00
Molybdenum	$3.60 to $3.95
Nickel	$1.05 to $1.03
Nickel Silver	53.50
Nickel Steel	13.00
Solder	13¢ plus metal value
Stainless Steel, 302	$1.07
Stainless Steel, 316	$1.26
Steel, atomized, prealloyed, 4600 series	14.00 plus metal value
Tin	14¢ plus metal value
Titanium, 99.25+%, per lb., f.o.b.	$11.25
Tungsten	$3.15 (nominal)

* F.O.B., shipping point.

BOLTS, NUTS, RIVETS, SCREWS

(Base discount, f.o.b. mill)

Pct. Discounts

Bolts	1-4 Containers	5 Containers	20,000 Lb.	40,000 Lb.
Machine				
½" and smaller x 3" and shorter	55	57	61	62
⅝" diam. x 3" and shorter	47	49½	54	55
¾" thru 1" diam x 6" and shorter	37	39½	45	46
¾" thru 1" diam. longer than 6" and 1½" and larger x all lengths	31	34	40	41
Rolled thread, ½" and smaller x 3" and shorter	55	57	61	62
Carriage, lag, plow, tap, blank, step, elevator and fitting up bolts ½" and smaller x 6" and shorter	48	50½	55	56

Note: Add 25 pct for less than container quantity. Distributor prices are 5 pct less on bolts and square nuts.

	Full case or Keg price
Nuts, Hex, HP reg. & hvy.	
¾ in. or smaller	62
⅞ in. to 1½ in. inclusive	56
1⅝ in. and larger	51½
C. P. Hex, reg. & hvy.	
¾ in. or smaller	62
⅞ in. to 1½ in. inclusive	56
1⅝ in. and larger	51½
Hot Galv. Hex Nuts (All Types)	
¾ in. and smaller	41
Semi-finished Hex Nuts	
¾ in. or smaller	62
⅞ in. to 1½ in. inclusive	56
1⅝ in. and larger	51½
(Add 25 pct for broken case or keg quantities)	
Finished	
⅞ in. and smaller	65

	Base per 100 lb
Rivets	
½ in. and larger	$12.85
	Pct. Off List
7/16 in. and smaller	15

	Discount (Packages)
Cap Screws	*Full Finished H. C. Heat Treat*
New std. hex head, packaged	Full Case
⅝" diam. and smaller x 6" and shorter	54	42
¾", ⅞", and 1" diam. x 6" and shorter	38	23
⅝" diam. and smaller x longer than 6"	..	..
¾", ⅞", and 1" diam. x longer than 6"	..	..

	C-1018 Steel Full-Finished Cartons	Bulk
¼" through ⅝" dia. x 6" and shorter	59	48
¾" through 1" dia. x 6" and shorter	45	32

Minimum quantity—¼" through ⅜" diam., 15,000 pieces; 7/16" through ⅝" diam., 5,000 pieces; ¾" through 1" diam., 2,000 pieces.

Machine Screws & Stove Bolts

	Quantity	Discount Mach. Screws	Discount Stove Bolts
Plain Finish Cartons		60	60
Bulk			
To ¼" diam. incl.	25,000-and over	60	..
5/16 to ½" diam. incl.	15,000-200,000	60	..

Machine Screws & Stove Bolt Nuts

	Quantity	Discount Hex	Discount Square
In Cartons		16	19
In Bulk			
⅜" diam. & smaller	25,000-and over	15	16

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, frt allowed in quantity)

Copper	
Rolled elliptical, 18 in. or longer, 5000 lb lots	44.50
Electrodeposited	36.00
Brass, 80-20, ball anodes, 2000 lb or more	51.50
Zinc, ball anodes, 2000 lb lots	16.00
(for elliptical add 1¢ per lb)	
Nickel, 99 pct plus, rolled carton, 5000 lb	1.0225
(Rolled depolarized add 3¢ per lb)	
Cadmium, 5000 lb	1.20
Tin, ball anodes $1.05 per lb (approx.).	

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum	65.90
Copper sulphate, 100 lb bags, per cwt.	22.75
Nickel salts, single, 100 lb bags	36.00
Nickel chloride, freight allowed, 100 lb	45.00
Sodium cyanide, domestic, f.o.b. N. Y., 200 lb drums	24.70
(Philadelphia price 25.00)	
Zinc cyanide, 100 lb	60.75
Potassium cyanide, 100 lb drum N. Y.	45.50
Chromic acid, flake type, 10,000 lb or more	30.44

CAST IRON WATER PIPE INDEX

Birmingham	125.8
New York	138.5
Chicago	140.9
San Francisco-L. A.	148.6

Dec. 1955, value, Class B or heavier 5 in. or larger, bell and spigot pipe. Explanation: p. 57, Sept. 1, 1955, issue. Source: U. S. Pipe and Foundry Co.

STEEL SERVICE CENTERS

Metropolitan Price, dollars per 100 lb.

Cities	City Delivery‡ Charge	Sheets: Hot-Rolled (18 ga. & hvr.)	Sheets: Cold-Rolled (15 gage)	Sheets: Galvanized (10 gage)††	Strip: Hot-Rolled	Plates	Shapes: Standard Structural	Bars: Hot-Rolled (merchant)	Bars: Cold-Finished	Alloy Bars: Hot-Rolled 4615 As rolled	Alloy Bars: Hot-Rolled 4140 Annealed	Alloy Bars: Cold-Drawn 4615 As rolled	Alloy Bars: Cold-Drawn 4140 Annealed
Atlanta		8.59	9.87	10.13	8.91	9.29	9.40	9.39	13.24				
Baltimore	$.10	8.65	9.35	9.09	9.15	9.10	9.65	9.55	11.80	16.28	15.28	19.82	19.08
Birmingham		8.18	9.45	10.46	8.51	8.89	9.00	8.99					
Boston**	.10	10.52	11.27	11.82	12.17	10.42	10.72	10.34	13.45	17.69	16.69	21.79	21.04
Buffalo**	.15	9.80	10.50	11.35	11.30	10.25	10.40	9.90	11.60	17.45	16.45	21.55	20.80
Chicago**	.15	8.69	10.35	11.05	10.35	8.62	9.16	8.79	10.80	17.10	16.10	19.70	20.45
Cincinnati**	.15	8.86	10.41	11.10	10.67	9.00	9.84	9.11	11.68	17.42	16.42	21.52	20.77
Cleveland**	.15	8.69[1]	9.89	11.02	10.47	8.88	9.67	8.90	11.40	17.21	16.21	21.31	20.56
Denver	.20	9.60	11.84	12.94	9.63	9.96	10.04	10.00	11.19				20.84
Detroit**	.15	8.95	10.61	11.40	10.72	8.99	9.84	9.10	11.16	17.38	16.38	21.48	21.63
Houston		8.10	8.60		8.15	8.45	8.85	8.10	11.60	16.20	15.25	19.65	18.95
Kansas City	.15	9.02	10.27	11.37	9.33	9.71	9.82	9.81	10.22	16.87	15.87	20.37	19.62
Los Angeles**		9.95[1]	11.55	12.20	11.55	10.00	10.00	9.10	14.20	18.30	16.45	21.30	20.80
Memphis	.15	8.55	9.80		8.60	8.93	9.01	8.97	12.11				
Milwaukee**	.15	8.83	10.49	11.19	10.49	8.76	9.30	8.93	11.04	17.24	15.34	21.24	19.09
New York**	.10	10.52	10.59	11.40	12.14	10.77	10.84	10.09	13.35	17.50	16.50	21.60	20.85
Norfolk	.20	8.20			8.90	8.65	9.20	8.90	10.70				
Philadelphia**	.10	9.55	10.10	10.71	11.75	10.15	10.20	9.50	12.05	17.48	16.48	21.58	20.83
Pittsburgh**	.15	8.69	9.84	10.91	10.45	8.62	9.78	8.79	11.40	17.10	16.10	19.70	20.45
Portland		10.00	11.75	13.30	11.95	11.50	11.10	9.85	15.30	18.50	17.45	20.75	20.25
San Francisco**	.10	11.00	11.95[2]	11.50	12.25	11.00	10.95	10.75	15.20	18.30	16.35	22.90	20.60
Seattle**		11.55	12.30	12.50	12.65	11.00	10.20	11.10	16.20	18.60	17.80	22.70	22.20
Spokane**	.15	11.70	12.45	12.65	13.30	11.15	11.35	11.75	16.35	17.75	17.95	21.58	22.35
St. Louis**	.15	9.07	10.73	11.02	10.73	9.00	9.76	9.17	11.43	17.48	16.48	20.08	19.33
St. Paul	.15	8.94	9.31	10.47	8.99	9.45	9.53	9.70	11.49		15.41		20.83

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 4999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may be combined with each other for quantity. ** These cities are on net pricing. Prices shown are for 2000 lb item quantities of the following: Hot-rolled sheet—10 ga. x 36 x 96—120; Cold-rolled sheet—20 ga x 36 x 96—120; Galv. sheet—10 ga x 36—120; Hot-rolled strip—⅛" x 1"; Plate—¼" x 84"; Shapes—I-Beams 6 x 12.5; Hot-rolled bar—Rounds—⅞-2 15/16; Cold-finished bar—C 1018—1" rounds; Alloy bar—hot-rolled 4615—1½" to 2¾"; cold drawn—15/16" to 2¾" round; Hot-rolled 4140—⅝" to 2¾" round, cold drawn—15/16" to 2¾" round.

†† 10¢ zinc. ‡ Deduct for country delivery. [1] 15 ga. & heavier; [2] 14 ga. & lighter.

(Effective Sept. 28, 1959)

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

Producing Point	Basic	Fdry.	Mall.	Bess.	Low Phos.
Birdsboro, Pa. *B6*	68.00	68.50	69.00	69.50	.....
Birmingham *R3*	62.00	62.50*	.....	.....	.....
Birmingham *W9*	62.00	62.50*	66.50	.....	.....
Birmingham *U4*	62.00	62.50*	66.50	.....	.....
Buffalo *R3*	66.00	66.50	67.00	67.50	.....
Buffalo *H1*	66.00	66.50	67.00	67.50	.....
Buffalo *W6*	66.00	66.50	67.00	67.50	.....
Chester *P2*	68.00	68.50	69.00	.....	.....
Chicago *I4*	66.00	66.50	66.50	67.00	.....
Cleveland *A5*	66.00	66.50	66.50	67.00	71.00†
Cleveland *R3*	66.00	66.50	66.50	67.00	.....
Duluth *I4*	66.00	66.50	66.50	67.00	71.00†
Erie *I4*	66.00	66.50	66.50	67.00	71.00†
Everett *M6*	67.50	68.00	68.50	.....	.....
Fontana *K1*	75.00	75.50	.....	.....	.....
Geneva, Utah *C7*	66.00	66.50	.....	.....	.....
Granite City *G2*	67.90	68.40	68.90	.....	.....
Hubbard *Y1*	.....	.....	66.50	.....	.....
Ironton, Utah *C7*	66.00	66.50	.....	.....	.....
Midland *C11*	66.00	.....	.....	.....	.....
Minnequa *C6*	68.00	68.50	69.00	.....	.....
Monessen *P6*	66.00	.....	.....	.....	.....
Neville Is. *P4*	66.00	66.50	66.50	67.00	71.00†
N. Tonawanda *T1*	.....	66.50	67.00	67.50	.....
Sharpsville *S3*	66.00	.....	66.50	67.00	.....
So. Chicago *R3*	66.00	66.50	66.50	67.00	.....
So. Chicago *W8*	66.00	.....	66.50	67.00	.....
Swedeland *A2*	68.00	68.50	69.00	69.50	.....
Toledo *I4*	66.00	66.50	66.50	67.00	.....
Troy, N. Y. *R3*	68.00	68.50	69.00	69.50	73.00
Youngstown *Y1*	.....	.....	66.50	.....	.....

DIFFERENTIALS: Add, 75¢ per ton for each 0.25 pct silicon or portion thereof over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct) 50¢ per ton for each 0.25 pct manganese or portion thereof over 1 pct, $2 per ton for 0.50 to 0.75 pct nickel, $1 for each additional 0.25 pct nickel. Add $1.00 for 0.31–0.69 pct phos.

Silvery Iron: Buffalo (6 pct), *H1*, $79.25; Jackson *J1, I4* (Globe Div.), $78.00; Niagara Falls (15.01–15.50), $101.00; Keokuk (14.01–14.50), $103.50; (15.51–16.00), $106.50. Add $1.00 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 18 pct. Add $1.25 for each 0.50 pct manganese over 1.00 pct. Bessemer silvery pig iron (under .10 pct phos.); $64.00. Add $1.00 premium for all grades silvery to 18 pct.

† Intermediate low phos.

STAINLESS STEEL

Base price cents per lb. f.o.b. mill

Product	201	202	301	302	303	304	316	321	347	403	410	416	430
Ingots, reroll.	22.75	24.75	24.00	26.25	—	28.00	41.25	33.50	38.50	—	17.50	—	17.75
Slabs, billets	28.00	31.50	29.00	32.75	33.25	34.50	51.25	41.50	48.25	—	22.25	—	22.50
Billets, forging	—	37.75	38.75	39.50	42.50	42.00	64.50	48.75	57.75	29.25	29.25	29.75	29.75
Bars, struct.	43.50	44.50	46.00	46.75	49.75	49.50	75.75	57.50	67.25	35.00	35.00	35.50	35.50
Plates	39.25	40.00	41.25	42.25	45.00	45.75	71.75	54.75	64.75	30.00	30.00	31.25–31.75	31.00
Sheets	48.50	49.25	51.25	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	48.25	40.75
Strip, hot-rolled	36.00	39.00	37.25	40.50	—	44.25	69.25	53.50	63.50	—	31.00	—	32.00
Strip, cold-rolled	45.00	49.25	47.50	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	42.50	40.75
Wire CF; Rod HR	—	42.25	43.50	44.25	47.25	47.00	71.75	54.50	63.75	33.25	33.25	33.75	33.75

STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland, Pa., *C11;* Brackenridge, Pa., *A3;* Butler, Pa., *A7;* Vandergrift, Pa., *U1;* Washington, Pa., *W2, J2;* Baltimore, *E1;* Middletown, O., *A7;* Massillon, O., *R3;* Gary, *U1;* Bridgeville, Pa., *U2;* New Castle, Ind., *I2;* Detroit, *M2;* Louisville, O., *R5.*

Strip: Midland, Pa., *C11;* Waukegan, Cleveland, *A5;* Carnegie, Pa., *S9;* McKeesport, Pa., *F1;* Reading, Pa., *C2;* Washington, Pa., *W2;* W. Leechburg, Pa., *A3;* Bridgeville Pa., *U2;* Detroit, *M2;* Detroit, *S1;* Canton, Massillon, O., *R3;* Harrison, N. J., *D3;* Youngstown, *R5;* Sharon, Pa., *S1;* Butler, Pa., *A7;* Wallingford, Conn., *U3* (plus further conversion extras); *W1* (25¢ per lb. higher); Seymour, Conn., *S13,* (25¢ per lb. higher); New Bedford, Mass., *R6* Gary, *U1,* (25¢ per lb. higher); Baltimore, Md., *E1* (300 series only).

Bar: Baltimore, *A7;* S. Duquesne, Pa., *U1;* Munhall, Pa., *U1;* Reading, Pa., *C2;* Titusville, Pa., *U2;* Washington, Pa., *J2;* McKeesport, Pa., *U1, F1;* Bridgeville, Pa., *U2;* Dunkirk, N. Y., *A3;* Massillon, O., *R5;* S. Chicago, *U1;* Syracuse, N. Y., *C11;* Watervliet, N. Y., *A3;* Waukegan, *A5;* Canton, O., *T5, R3;* Ft. Wayne, *I4;* Detroit, *R5;* Gary, *U1;* Owensboro, Ky., *G5;* Bridgeport, Conn., *N8;* Ambridge, Pa., *B7.*

Wire: Waukegan, *A5;* Massillon, O., *R3;* McKeesport, Pa., *F1;* Ft. Wayne, *J4;* Newark, N. J. *D2;* Harrison, N. J., *D3;* Baltimore, *A7;* Dunkirk, *A3;* Monessen, *P1;* Syracuse, *C11;* Bridgeville, *U2;* Detroit, *R5;* Reading, Pa., *C2;* Bridgeport, Conn., *N8.*

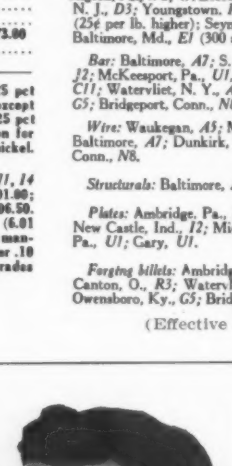
Structurals: Baltimore, *A7;* Massillon, O., *R3;* Chicago, Ill., *J4;* Watervliet, N. Y., *A3;* Syracuse, *C11;* S. Chicago, *U1.*

Plates: Ambridge, Pa., *B7;* Baltimore, *E1;* Brackenridge, Pa., *A3;* Chicago, *U1;* Munhall, Pa., *U1;* Midland, Pa., *C11;* New Castle, Ind., *I2;* Middletown, *A7;* Washington, Pa., *J2;* Cleveland, Massillon, *R3;* Coatesville, Pa., *C15;* Vandergrift, Pa., *U1;* Gary, *U1.*

Forging billets: Ambridge, Pa., *B7;* Midland, Pa., *C11;* Baltimore, *A7;* Washington, Pa., *J2;* McKeesport, *F1;* Massillon, Canton, O., *R3;* Watervliet, *A3;* Pittsburgh, Chicago, *U1;* Syracuse, *C11;* Detroit, *R5;* Munhall, Pa., S. Chicago, *U1;* Owensboro, Ky., *G5;* Bridgeport, Conn., *N8;* Reading, Pa., *C2.*

(Effective Sept. 28, 1959)

The Improved



FLEX-A-FOAM
Dust Mask

Your best ounce of protection against

IRRITATING DUST

HERE'S WHY:

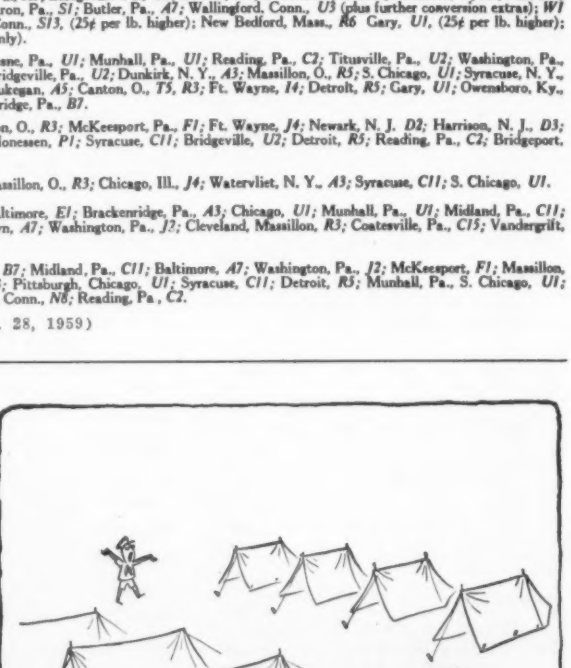
- **Workers wear it.** Lightweight (just 1 ounce), snug, comfortable and easy-to-breathe through, Flex-A-Foam is the one respirator your workers actually welcome.
- **It's super-efficient.** Flex-A-Foam's pure latex filter protects against nuisance dust particles 100 times smaller than the eye can see!
- **It's simple.** Only four sturdy, long-wearing parts — all interlocking — all unconditionally guaranteed.
- **And—it's economical.** Low first cost — less than any other quality respirator on the market. Low upkeep — washable filter outlasts throw-away type by more than 100 to 1!

Dust Protection Your Workers Will Welcome and Wear

Sample $1.45 postpaid (Industrial price only)

FLEX-A-FOAM DUST MASK

FLEXO PRODUCTS, INC. • Westlake, Ohio



"EVERYTHING HINGES ON HAGER!"®

We'll make IT for you! For standard (5,000 different types and sizes) or special hinges, write or wire: C. Hager & Sons Hinge Mfg. Co., Victor & "I" Street, St. Louis 4, Mo.

In Canada, Hager Hinge Canada Ltd., Kitchener, Ont.

HAGER HINGES

Founded 1849, Every Hager Hinge Swings on 100 Years of Experience

Ferrochrome

Cents per lb contained Cr, lump, bulk, carloads, del'd. 67-71% Cr, .30-1.00% max. Si.

0.02% C....	41.00	0.50% C....	38.00
0.05% C....	39.00	1.00% C....	37.75
0.10% C....	38.50	1.50% C....	37.50
0.20% C....	38.25	2.00% C....	37.25

4.00-4.50% C, 60-70% Cr, 1-2% Si.. 37.25
3.50-5.00% C, 57-64% Cr, 2.60-4.50% Si 28.25
0.025% C (Simplex) 39.75
8% max C, 50-55% Cr, 6% max Si. 25.75
4½% max C, 50-55% Cr, 2% max Si 26.50

High Nitrogen Ferrochrome

Low-carbon type 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome max. 0.10% C price schedule.

Chromium Metal

Per lb chromium, contained, packed, delivered, ton lots, 97.25% min. Cr, 1% max. Fe.

0.10% max. C	$1.29
9 to 11% C, 88-91% Cr, 0.75% Fe...	1.38

Electrolytic Chromium Metal

Per lb of metal 2" x D plate (⅛" thick) delivered packed, 99.80% min. Cr. (Metallic Base) Fe 0.20 max.

Carloads	$1.15
Ton lots	1.17
Less ton lots	1.19

Low Carbon Ferrochrome Silicon

(Cr 39-41%, Si 42-45%, C 0.05% max.) Carloads, delivered, lump, 3-in. x down, packed.

Price is sum of contained Cr and contained Si.

	Cr	Si
Carloads, bulk	28.25	14.60
Ton lots	33.50	16.05
Less ton lots	35.10	17.70

Calcium-Silicon

Per lb of alloy, lump, delivered, packed. 30-33% Cr, 60-65% Si, 3.00 max. Fe.

Carloads, bulk	24.00
Ton lots	27.95
Less ton lots	29.45

Calcium-Manganese—Silicon

Cents per lb of alloy, lump, delivered, packed.

16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads, bulk	23.00
Ton lots	26.15
Less ton lots	27.15

SMZ

Cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe ½ in. x 12 mesh.

Ton lots	21.15
Less ton lots	22.40

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5; 38-42% Cr, 17-19% Si, 8-11% Mn, packed.

Carload lots	18.45
Ton lots	19.95
Less ton lots	21.20

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

Carload bulk	19.20
Ton lots to carload packed	21.15
Less ton lots	22.40

Ferromanganese

Maximum base price, f.o.b., lump size, base content 74 to 76 pct Mn. Carload lots, bulk.

Producing Point	Cents per-lb
Marietta, Ashtabula, O.; Alloy, W. Va.; Sheffield, Ala.; Portland, Ore.	12.25
Johnstown, Pa.	12.25
Neville Island, Pa.	12.25
Sheridan, Pa.	12.25
Philo, Ohio	12.25
S. Duquesne	12.25

Add or substract 0.1¢ for each 1 pct Mn above or below base content.

Briquets, delivered, 66 pct Mn:

Carloads, bulk	14.80
Ton lots packed in bags	17.20

Spiegeleisen

Per gross ton, lump, f.o.b. Palmerton, Pa., and Neville Island, Pa.

Manganese	Silicon	
16 to 19%	3% max.	$100.50
19 to 21%	3% max.	102.50
21 to 23%	3% max.	105.00

Manganese Metal

2 in. x down, cents per pound of metal delivered.

95.50% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.

Carload, packed	45.75
Ton lots	47.25

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, f.o.b. Marietta, O., delivered, cents per pound.

Carloads	34.00
Ton lots	36.00
250 to 1999 lb	38.00
Premium for Hydrogen - removed metal	0.75

Medium Carbon Ferromanganese

Mn 80 to 85%, C 1.25 to 1.50, Si 1.50% max., carloads, lump, bulk, delivered, per lb of contained Mn 25.50

Low-Carb Ferromanganese

Cents per pound Mn contained, lump size, packed, del'd Mn 85-90%.

	Carloads	Ton	Less
0.07% max. C, 0.06% (Bulk) P, 90% Mn	37.15	39.95	41.15
0.07% max. C	35.10	37.90	39.10
0.10% max. C	34.35	37.15	38.35
0.15% max. C	33.60	36.40	37.60
0.30% max. C	32.10	34.90	36.10
0.50% max. C	31.60	34.40	35.60
0.75% max. C, 80.85% Mn, 5.0-7.0% Si ...	28.60	31.40	32.60

Silicomanganese

Lump size, cents per pound of metal, 65-68% Mn, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢ f.o.b. shipping point.

Carloads bulk	12.80
Ton lots, packed	14.45
Carloads, bulk, delivered, per lb of briquet	15.10
Briquets, packed pallets, 2000 lb up to carloads	17.50

Silvery Iron (electric furnace)

Si 15.50 to 16.00 pct., f.o.b. Keokuk, Iowa, or Wenatchee, Wash., $106.50 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., $93.00.

Silicon Metal

Cents per pound contained Si, lump size, delivered, packed.

	Ton lots,	Carloads,
98.25% Si, 0.50% Fe..	22.45	21.25
98% Si, 1.0% Fe	21.95	20.65

Silicon Briquets

Cents per pound of briquets, bulk, delivered, 40% Si, 2 lb Si, briquets.

Carloads, bulk	8.00
Ton lots, packed	10.80

Electric Ferrosilicon

Cents per lb contained Si, lump, bulk, carloads, f.o.b. shipping point.

50% Si....	14.60	75% Si....	16.90
65% Si....	15.75	85% Si....	18.60
	90% Si....	20.00	

Ferrovanadium

50-55% V delivered, per pound, contained V, in any quantity.

Openhearth	3.20
Crucible	3.30
High speed steel	3.40

Calcium Metal

Eastern zone, cents per pound of metal, delivered.

	Cast	Turnings	Distilled
Ton lots	$2.05	$2.95	$3.75
100 to 1999 lb..	2.40	3.30	4.55

(Effective Sept. 28, 1959)

Alsifer, 20% Al, 40% Si, 40% Fe, f.o.b. Suspension Bridge, N. Y., per lb.

Carloads, bulk	9.85¢
Ton lots	11.20¢

Calcium molybdate, 43.6-46.6% f.o.b. Langeloth, Pa., per pound contained Mo $1.50

Ferrocolumbium, 58-62% Cb, 2 in. x D, delivered per pound

Ton lots	$3.45
Less ton lots.....	3.50

Ferro-tantalum-columbium, 20% Ta, 40% Cb, 0.30% C, del'd ton lots, 2-in. x D per lb con't Cb plus Ta $3.40

Ferromolybdenum, 55-75%, 200-lb containers, f.o.b. Langeloth, Pa., per pound contained Mo.. $1.76

Ferrophosphorus, electric, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., $5.00 unitage, per gross ton $120.00
10 tons to less carload $131.00

Ferrotitanium, 40% regular grade 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti $1.35

Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti $1.50
Less ton lots $1.54

Ferrotitanium, 15 to 18% high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton $255.00

Ferrotungsten, ¼ x down packed, per pounds contained W, ton lots delivered ..... $2.15 (nominal)

Molybdic oxide, briquets per lb contained Mo, f.o.b. Langeloth, Pa. $1.49
bags, f.o.b. Washington, Pa., Langeloth, Pa. $1.38

Simanal, 20% Si, 20% Mn, 20% Al, f.o.b. Philo, Ohio, freight allowed per lb.

Carload, bulk lump	18.50¢
Ton lots, packed lump	20.50¢
Less ton lots	21.00¢

Vanadium oxide, 86-89% V_2O_5 per pound contained V_2O_5 .... $1.38

Zirconium silicon, per lb of alloy

35-40% del'd, carloads, bulk..	26.25¢
12-15%, del'd lump, bulk-carloads	9.25¢

Boron Agents

Borosil, per lb of alloy del. f.o.b. Philo, Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B
2000 lb carload $5.50

Ferro Zirconium Boron, Zr 50% to 60%, B 0.8% to 1.0%, Si 8% max., C 8% max., Fe balance, f.o.b. Niagara Falls, New York, freight allowed, in any quantity per pound ..... 30¢

Corbortam, Ti 15-21%, B 1-2%, Si 2-4%, Al 1-2%, C 4-5-7.5%, f.o.b., Suspension Bridge, N. Y., freight allowed.
Ton lots per pound ..... 18.25¢

Ferroboron, 17.50 min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D, ton lots.. $1.20
F.o.b. Wash., Pa., Niagara Falls, N. Y., delivered 100 lb up

10 to 14% B	.85
14 to 19%	1.20
19% min. B	1.50

Grainal, f.o.b. Cambridge, O., freight, allowed, 100 lb and over

No. 1	$1.05
No. 79	50¢

Manganese-Boron, 75.00% Mn, 17.50% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd.

Ton lots (packed)	$1.46
Less ton lots (packed)	1.57

Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, del'd less ton lots 2.15

ELECTRICAL POWER EQUIPMENT IN STOCK

DC MOTORS

Qu.	H.P.	Make	Type	Volts	RPM
1	3000	New Elliott	Enc. F.V.	475	330
1	2000	New Whse.	Enc. F.V.	525	600
1	2250	New Elliott	Enc. F.V.	600	200/300
1	2200	G.E.	MCF	600	400/500
1	1750	New Elliott	Enc. F.V.	250	175/350
8	1500	New Whse.	Enc. F.V.	525	600
1	1300	G.E.	MCF-13	300	200/400
1	1280	G.E.	MCF	600	450/600
1	1000	Whse.		500	800/2000
1	940	Whse.	QM	250	140/170
2	940	S.S.	Enc. F.V.	600	600/1000
2	800	G.E.	MCF	250	400/750
2	765	Allis, Ch.	MHC	550	1012/1350
2	750	G.E.	MCF	600	450/900
1	750	G.E.	M.F.	600	120/360
4	600	Whse.		250	275/550
1	500	G.E.	MPC-10	250	184/400
2	450	Whse.		550	415
2	400	G.E.	CY-375	300	1000/1500
2	325	Allis Ch.	MHC	250	450/900
1	300	Cr. Wh.	H-103 B.B.	230	1200
1	300	Rel. B.B.	T-864-D.P.	240	850
1	280	Whse.	CB-307-4	250	850/1200
1	150	Cr. Wh.	CMC-405H	230	1150
1	150	G.E.B.B.	TLC-74	250	1150/3500
1	150	G.E.B.B.	CD	600	350/750
1	150	G.E.	CDP-125, B.B.	220	1750
1	150	A.C.	E.V.B.B.	250	450/1200
1	130	G.E.B.B.	TLC-50	250	1950/5000
1	120	Rel. B.B.	1050T	230	575/900
1	100	Whse.	SK-150	230	450/1160
1	100	G.E.	CDP-145	230	1750
1	80	Whse.	SK-123.9	240	2000/4500
1	75	G.E.B.B.	CD-1235-D.P.	600	850
1	60/75	Rel.	1050T	250	350/1050
1	50/40	Whse. B.B.	SK-131, TEFC	250	500/1500
1	25/33	Rel. B.B.	TY562	240	300/1200
1	40	Rel. B.B.	385F, TEFC	230	500/1500
1	30/40	Rel. B.B.	T-564-D.P.	240	300/900

MERCURY ARC RECTIFIERS

3—150 KW, G.E., Sealed Tube Ignitron Unit Substation load centers 275 V. D.C., 2300 V. A.C. Pyranol filled transformers complete.
3—150 KW, G.E., Ignitron, 245 V. D.C.—230 V. A.C. air cooler transformers with controls.

MG SETS—3 Ph. 60 Cy.

Qu.	K.W.	Make	RPM	DC Volts	AC Volts
1	2000	G.E.	514	600	2300/4600
2	1750/2100	G.E.	514	250/300	2300/4600
1	1700	G.E.	514	600	2300/4600
1	1500	G.E.	720	600	6600/13200
1	1500	Cr.Wh. 4 unit	720	100	2300
1	500	G.E.	900	125/250	440
1	500	G.E.	900	250	2300/4600
1	350	G.E.	900	125	440/2300/4160
1	300	G.E.	1200	250	2300/4000
1	300	G.E.	1200	250	440/2300
1	250	G.E.	900	250	440/2300
1	240	Whse.	900	125	220/440
1	200	Whse.	1200	550	2300
1	200	Fl. Mfg.	1200	250	2300/4600
1	150	G.E.	1200	275	2300
1	150	Whse.	1200	275	2300
1	150	G.E.	1200	250	440
1	150	G.E.	1200	125	440
1	140	Cr.Wh.	690	125/250	2300
1	100	G.E.	1170	250	220/440
3	100	Cr.Wh.	91100	525	2300/550
1	100	G.E.	1200	250	2400/4160
3	75	Whse.	1200	125	440

TRANSFORMERS

Qu.	KVA	Make	Type	Ph.	Voltages
3	3333	Whse.	OISC	1	13800 x 2300
3	1000	G.E.	CA/FA	1	13800 x 230/460
3	333	A.C.	OISC	1	4800/2400 x 480
1	750	Wagner	JPC-16	3	13200 x 480
2	750	G.E.	Pyranol	1	4800x85/55-253/165
3	500	Kuhl	OISC	1	13200 x 6600
3	333	G.E.	HS	1	7200/12470YX 2400/4160Y
3	333	G.E.	OISC	3	2400/4160YX600
3	150	G.E.	OISC	1	23000x2300/4000Y
3	100	G.E.	HS	1	4800/8320Y x 120/240

CRANE & MILL MOTORS 230 V. D. C.

Qu.	H.P.	Make	RPM	Type
12	12/14	Whse.	700/600	MCA-30, Series
1	20	Whse.	975	K-5 Series
2	23	G.E.	650	MD8-402
1	35	Whse.	480	CK-9 Comp. S.B.
1	35	Whse.	480	CK-9 Sh. R.B.
1	45	Whse.	600	CK-9 Comp. S.B.
3	50	G.E.	650	COM-1830 Comp.
2	50	Whse.	525	CK-9 Shunt. R.B.
2	50	Whse.	600	CK-9 Comp. R.B.
1	50	G.E.	525	COM-1830AEH.B.
1	50	Cr.Wh.	550	SW-50 Comp.
1	100	G.E.	475	CO-1632 S.B.
8	100-140	Whse.	590/415	MC-90 R.B.

RE-NU-BILT By

BELYEA COMPANY, INC.

47 Howell St. Jersey City 6, N. J.

Tel. OLdfield 3-3334

Philadelphia Sales Are "Very Poor"

Used machinery sales in the Philadelphia area have come to a standstill. Dealers are getting few orders.

Used machinery men are waiting for the steel strike to end and business to pick up.

▪ Used machinery sales in the Philadelphia area are off. Dealers are closing few sales and are waiting for an end to the steel strike before they can expect an upturn.

Dealers say business is so slow there is nothing to even talk about. One summed up the sales question with an emphatic, "Very poor."

The Causes—Most dealers are reluctant to put all the blame for the slowdown entirely on the steel situation. However, they offer no reasoning other than "users are just hanging on to their dollars."

One bright spot in the area last week was Allentown, Pa. A dealer there said business, after being terrible since the start of the strike, had picked up to higher than pre-strike levels. He didn't have any explanation for the sudden upturn, but said he was just glad things were looking better.

Tight Money—Money, he said, is still tight in the area. "We're close to the blast furnaces (Bethlehem Steel Co.) and the strike has had a bad psychological effect on everyone here."

The general consensus among dealers is that business is way off in regard to last year's figures. The fall of 1958 showed increased sales in the area and some dealers had hoped the trend would repeat itself.

Auctions Good — Auctions are bringing good prices for all types of machinery. Dealers say that what little they do sell is in general machinery lines. No specific types of machinery has been in great demand the past two months. Inquiries are coming in at pre-strike levels, but "we're not closing any sales," one dealer says.

Another says that although sales are at a standstill now, a big rush on all types of used machines will come right after the strike is settled.

Detroit Auction

Industrial Plants Corp. will auction off $2 million worth of used machinery at the automotive parts plant of Metal Mouldings Corp., Detroit, Oct. 6 and 7.

Metal stamping presses, roll forming machines, welding equipment and other machines and equipment will be sold.

"So much for younger blood in the organization."

CONSIDER GOOD USED EQUIPMENT FIRST

BALER
Model 115P Logemann, Box 100" l, 48" w, 21" d. Bale size 24" x 14" x 16"
BENDER
No. 1 Pines Hydraulic, Capacity 1" x 16 Ga. Tube
BENDING ROLLS
13' x 3/16" Bertsch Initial Type—New 1957
15' x 3" Bertsch Initial Type—New 1948
32' x ¾" Baldwin Pyramid Type—New 1942
BRAKE—BOX & PAN
8' x ¼" Dreis & Krump, 12" Finger Extension
BRAKES—PRESS TYPE
90 ton Niagara, Model 90-8-10
16' x 10 Ga. Clearing
CRANES—OVERHEAD ELECTRIC TRAVELING
5 ton P&H 40' Span 220 Volt D.C.
10 ton P&H 55' Span 220/3/60
10 ton P&H 39' Span 230 Volt D.C.
10 ton Milwaukee 57' Span 230 Volt D.C.
10 ton Whiting 75' Span 220/3/60 A.C.
10 ton Shaw 120' Span 230 Volt D.C.
15 ton Milwaukee 56' Span 440/3/60 A.C.
15 ton Shepard Niles 55' 6" Span 220/3/60
20 ton P&H 57' 6" Span 220/3/60
30 ton Shaw 70' Span 230 Volt D.C.
120 ton Niles 67' Span 230 Volt D.C.
120 ton Shepard Niles 77' Span 220/3/60 A.C.
CUTOFF MACHINE
AC3 Yoder Cutoff with dies for ⅝, ⅛, ⅝, ¾, ⅞, 1, 1⅛ and 1¼" tubing
DEGREASER
Detrex Vapor Degreaser 41'6"L x 4'6"W x 8' Deep
800 Gal Storage Tank, Detrex Solvent Still
DRAW BENCHES
7,000 lb Draw Bench, 51 ft. Draw
10,000 lb. Draw Bench, 50 ft. Draw
35,000 lb. Draw Bench, 41 ft. Draw

FLANGING MACHINE
¾" Blue Valley No. 4
FORGING MACHINE
1" to 5" Acme, Ajax, National
HAMMERS—BOARD DROP—STEAM DROP—STEAM FORGING 300 lb. to 12,000 lb. incl.
HEADER
⅝" National DSSD Header, with 1" National Hydr. Straightener & #4 Ajax-Hogue Wire Drawer
LEVELER—ROLLERS
24 Torrington 9 Rolls 3" Dia.
60" Guide 17 Rolls 4⅛" Dia.
MULTI SLIDE MACHINE
No. 35 U. S. Multi-Slide, Max width of stock 4⅛" x .089 thick, length of feed 12½"
NIBBLER
Pullmax Model 3, Capacity 11/32"
PRESSES—HYDRAULIC
300 ton Southwark Platen 28" x 28", Stroke 25"
500 ton Watson Stillman Piercing Press, 48" x 72"
1000 ton Southwark Bed 44" x 54", Stroke 20"
4500 ton B-L-H Bed 68"x68", Stroke 40"
PUNCH & SHEAR COMBINATIONS
#2½ Buffalo Ironworker
Cleveland Style W, 60" Throat, 312 Ton Capy. Complete with dishing att. punches, shear blades
ROLLING MILLS
3¼" x 7" Six Cluster Mill
10" x 14" Single Stand Two High
13" x 16" Single Stand Two High
16" x 24" Two Stand Two High
26" x 60" Single Stand Two High
12" x 32" Birdsboro 3-Hi Bar Mill
22" x 40" Lewis 3-Hi Sheet Mill
22" x 84" Single Stand Three High
34" x 112" Single Stand Three High

ROLLS—PLATE STRAIGHTENING
72" McKay 9 Rolls 15" Dia. Backed-up
92" Hilles & Jones 6 Rolls 10" Dia.
SHEAR—BEAM
Pels DT-36-B Armor Plate, Capy 15" beams & channels, 6"x6"x⅝" angles
SHEAR—GATE
8' x 1" Cincinnati—LATE
SHEARS, MISC.
60" x 10 Ga. Cut-off Line
84" x 3/16" United Up-Cut, 50 H.P. A.C. Motor Drive
SHEAR—ROTARY
No. 23A Quickwork Whiting 3/16 Capacity
No. 40A Quickwork Whiting ⅜" Capacity
SHEARS—SQUARING
6' x 14 Ga. Edwards, Motor Drive—LATE
10' x ¼" United
10' x ⅝" Niagara No. 910
SLITTERS
36" Waterbury Farrel, Slitting Line, Arbor 4⅛" Dia.
36" Wean Slitting Line, Arbor 5" Dia.
STRAIGHTENERS
Torrington #1734 12-Roll, Capy. 1¾", Rd. 1-9/16" ⅝" Medart Straightening & Cut-off Machine
SWAGING MACHINE
#6½A Fenn 2-Die, Capacity 3¾" Tube, 1¼" Solid 10" Die Length, Hydraulic Feed
TESTING MACHINES
20,000 lb. Baldwin Univ. Hydraulic
50,000 lb. Riehle Bros. 2-Screw Universal
100,000 lb. Olsen 4-Screw Beam Type Universal
200,000 lb. Olsen, 4-Screw Beam Type Universal
TUBE REDUCERS
1⅛" Standard Tube Reducer
2½" Standard Tube Reducer
2¼" Tube Reducer for Aluminum

• Manufacturing **A. T. HENRY & COMPANY, INC.** Equipment •
50 CHURCH ST., NEW YORK CITY 8
Telephone COrtlandt 7-3437

Confidential Certified Appraisals
Liquidations — Bona Fide Auction Sales Arranged

Consulting Engineering Service
Surplus Mfg. Equipment Inventories Purchased

OFFERING
BRIDGE CRANES
ARNOLD HUGHES COMPANY
2765 PENOBSCOT BLDG. DETROIT, MICH.
WOodward 1-1974

RAILWAY EQUIPMENT
FOR SALE
Used "As Is" and Reconditioned

RAILWAY CARS
All Types

SERVICE-TESTED
FREIGHT CAR REPAIR PARTS
For All Type of Cars

3—DIESEL-ELECTRIC LOCOMOTIVES
General Electric
44-Ton Standard Gauge
In ICC Operating Condition

10 Covered Hopper Cars
70-Ton Capacity, Standard Gauge

2—RAILROAD TRACK SCALES
1—150-Ton, Heavy Duty, 60'
1—125-Ton, 52'6"

RAILWAY TANK CARS and STORAGE TANKS
6,000- 8,000- and 10,000-Gallon
Cleaned and Tested

IRON & STEEL PRODUCTS, INC.
General Office
13496 S. Brainard Ave.
Chicago 33, Illinois
Phone: Mitchell 6-1212
New York Office
Suite 1608-9, 51-8 E. 42nd St.
New York 17, N. Y.
Phone: YUkon 6-4766

"ANYTHING containing IRON or STEEL"

FOR SALE
1—3" Rd. Cap. Open End Vertical Bar Shear

1—2¾" Cap. Buffalo Billet Shear

1—5-Roll Abramson Tube Straightener ¾" to 3" O.D. Tube

ALBERT CURRY & COMPANY, INC.
#2 GATEWAY CENTER, PITTSBURGH 22, PA.

IMMEDIATELY AVAILABLE
Because of Mill Consolidation
3 LEE WILSON RECTANGULAR BELL-TYPE ANNEALING FURNACES

atmosphere-controlled with 9 bases, are available. Each is approximately 7' x 7' x 14'. Excellent when used for manufacture of steel coils, they have a capacity of 50 tons per charge. These top-grade furnaces are still set up in the plant. Tremendous values specially priced for prompt sale.

NATIONAL MACHINERY EXCHANGE
126 Mott St. New York 13, N. Y.
CAnal 6-2470

eastern Rebuilt Machine Tools
THE SIGN OF QUALITY—THE MARK OF DEPENDABILITY

BALL BEARING DRILLS
No. ½ Avey MA8, m.d.
No. 2 Avey, m.d.
No. 1B Edlund, m.d., new
No. 2LMS Leland & Gifford, m.d., H.S.
No. 2LMS Leland & Gifford, single spindle, H.S., m.d.
No. 4BM Fosdick, single spindle H.S., m.d.
No. 4MS Leland & Gifford H.S., 4 speed A.C. m.d. to spindle
1 spindle No. 2MA6 Avey H.S. Type B, m.d., 7½" overhang, 1943
2 spindle Atlas Bench Type, 1942
2 spindle Allen, belted m.d., 18" overhang
2 spindle No. 2 Avey H.S., belted m.d.
2 spindle No. 2BMA, No. 1 Avey Production Type, m.d.
2 spindle No. 3 MA6 Avey H.S., m.d.
2 spindle No. 2MS Allen H.S., m.d.
2 spindle No. 2 Leland & Gifford H.S., 8" overhang, m.d.
2 spindle Leland & Gifford H.S., Hydraulic Type, m.d.
2 spindle No. 2 LMS Leland & Gifford, hydraulic step by step H.S., m.d.
3 spindle No. 3 Morse Taper, Foote-Burt "Sipp" H.S., m.d.
3 spindle No. 2B-8" Edlund, H.S., m.d.
3 spindle No. 2MA6 Avey, H.S., m.d.
3 spindle Leland-Gifford #1LMS—H.S., m.d., late
3 spindle Leland-Gifford H.S., m.d.
4 spindle Leland-Gifford, m.d., on each spindle
4 spindle No. 1S Buffalo Bench Type
4 spindle Allen H.S., belt drive
4 spindle No. ½ MA8 Avey, m.d., H.S.
4 spindle Demco H.S., individual m.d.
4 spindle No. 2MS Edlund, m.d.
4 spindle No. 2BMA6 Avey H.S., m.d.
5 spindle Allen H.S., belt drive
6 spindle Allen H.S., 7" overhang
6 spindle Leland-Gifford, m.d. on each spindle No. 2 taper
6 spindle No. 1 Avey High Speed, m.d.
6 spindle No. ½ Avey MA8 Avey, H.S., m.d.

We carry an average stock of 2,000 machines in our 11 acre plant at Cincinnati. Visitors welcome at all times

THE EASTERN MACHINERY COMPANY
1002 Tennessee Avenue, Cincinnati 29, Ohio
MElrose 1-1241 **CABLE ADDRESS—EMCO**

ROLLING MILLS — STEEL WORKS EQUIPMENT

1—AUTOMATIC COOLING BED FOR BARS up to 2" dia. consists of run-in table, cascade section, shuffle bar section, run-out table, with all electrics, 200 ft. long.
1—32" & 20" x 110" PLATE MILL, 3-high.
1—24" & 52" x 77" TANDEM COLD REDUCTION MILL, 4-high, 3 stands.
1—28" x 40" HOT STRIP MILL, 2-high reversing, with 2500 HP D.C., motor generator, etc.
1—25" & 42" x 66" HOT STRIP MILL, 4-high.
1—24" x 36" 2-HIGH MILL driven by 400 HP motor, 4600/3/60.
1—22" x 38" 2-HIGH MILL driven by 600 HP motor, 4600/3/60.
1—2½" & 8" x 8" COLD STRIP MILL, 4-high.
1—8" x 10" COLD MILL including uncoiler, recoiler.
2—28" 3-HIGH ROLL STANDS.
1—New 16" BAR MILL, one 3-high roll stand, pinion stand.
1—New 12" BAR MILL, four 3-high roll stands, pinion stand.
1—12" MERCHANT BAR MILL with 18" roughing mill and heating furnace.
1—9" BAR MILL, 3-high.
2—MORGAN TRAVELING TILTING TABLES for 24" 3-high bar mill.
1—34" x 192" ROLL GRINDER.
2—65-TON ELECTRIC MELTING FURNACES, TOP CHARGE, with all electrical and mechanical equipment, including 15,000 KVA and 13,333 KVA transformers.
1—New top-charge ELECTRIC MELTING FURNACE with 2000 KVA transformer, 13,200 volts, 3 phase, 60 cycle.
1—72 PLATE PROCESSING & SHEARING LINE, with tables, transfers, and cut and rotary side trimming shears, scales and pliers. Modern, little used.
1—SHEET POLISHING MACHINE, capacity 48" x 144".
1—ROLL LATHE, ENCLOSED HEADSTOCK, up to 36" dia. rolls.
1—OPEN HEARTH CHARGING MACHINE, 5 ton capacity 11' track gauge.
1—MAGNETIC SEPARATOR double pulleys, Stearns.
1—SIDE TRIMMER, Streine, maximum width 48", makes 2 cuts 3/16" mild steel.
1—HALLDEN STRAIGHTENING and cutting-off machine, capacity .562" brass rod.
1—POINTER for tube 2" O.D. x ¼" wall maximum.
3—CRANE TONGS for coils, automatic, 30,000 lbs. capacity.
1—3000 HP GEAR DRIVE, ratio 500 to 95.8 RPM.
1—1200 HP GEAR DRIVE, 353 to 94.5 RPM, 3.73 to 1 ratio.
1—3500 HP MOTOR, 11000/6000 volts, 3 phase, 60 cycle, 514 RPM, synchronous, never used.

FRANK B. FOSTER, INC.
2220 Oliver Building, Pittsburgh 22, Pa.
Cable: "Foster, Pittsburgh" Telephone Atlantic 1-2780

EST. 1904
DAVIDSON
PIPE COMPANY INC.
ONE OF THE LARGEST STOCKS IN THE EAST
Seamless and Welded ⅛" to 24" O.D.
All wall thickness Manufactured.
Specialty large sizes.
Cutting — Threading — Flanging — Fittings — Valves.
Call GEdney 9-6300
54th St. & 2nd Ave., Brklyn 32, N. Y.

FOR SALE
FREIGHT CAR REPAIR PARTS
RELAYING RAILS & ACCESSORIES
STEEL STORAGE TANKS
FRT. CARS & LOCOMOTIVES
CONTRACTOR EQUIP. & MACHINERY
THE PURDY CO.
8754 S. DOBSON AVE.
CHICAGO 19, ILL.—BA. 1-2100
ALSO ST. LOUIS, MO., SAN FRAN. AND LONG BEACH, CALIF.

WORLD'S LARGEST STOCK
STAMPING PRESSES
SQUARING SHEARS • PRESS BRAKES
REBUILT and GUARANTEED
WILL LEASE WITH OPTION TO PURCHASE, OR WILL FINANCE OVER LONG TERM
JOSEPH **HYMAN** & SONS
TIOGA, LIVINGSTON & ALMOND STS.
Philadelphia 34, Pa. Phone GArfield 3-8700

REBUILT—GUARANTEED ELECTRICAL EQUIPMENT
STEEL MILL SPECIALS

(2)—3000-HP Whse. Motors, 600-V.D.C., 600 R.P.M. (in tandem, encl. F.Vent.)
(1)—2200-HP Whse. Motor, 600-V.D.C., 92/132 R.P.M., enclosed, F.Vent.
(4)—700-HP Whse. Motors, 250-V.D.C., 300/700 R.P.M., enclosed, F.Vent.
(2)—645-HP S.S. Motors, 300-V.D.C., 1000 R.P.M., enclosed, F.Vent.
(2)—600HP Allis-Chalmers Motor, 600-V.D.C., 300/600 R.P.M., mill type.

• • • • •

We can supply suitable Motor Generator Sets with any of the above.

• • • • •

(1) 1875 K.W. Whse. motor generator set 250 V.D.C. with 2700 HP., motor 13800/6900 V and control.

(1)—2500-HP. 296 R.P.M. Allis-Chalmers slip ring motor, 2200-V., 3 ph., 60 cy.
(1)—1800-HP, 252 R.P.M. Whse. slip ring motor, 2300-v., 3 ph., 60 cy.
(3)—1500-HP, 444 R.P.M. General Electric slip ring motors. 6600/4160-V., 3 ph., 60 cy.

★ ★ ★ ★ ★ ★ ★

(1)—1250-KBA Whse. Hi-Cycle Frequency Set, 800-V., 960 cycle with 1875-HP syn. motor, 2300-V., 3 ph., 60 cy. with all switchgear.

T. B. MAC CABE COMPANY
4302 Clarissa St., Philadelphia 40, Penna.
Cable Address: "Macsteel" Philadelphia, Pa.
Phone: Davenport 4-8300

HAMMERS STEAM DROP

2,000# MODEL E CHAMBERSBURG
3,000# CHAMBERSBURG PNEUMATIC
125 H.P. A.C. Motor—LATE

IN STOCK

LANG MACHINERY CO., INC.
28th St. & A.V.R.R. PITTSBURGH 22, PA.
GRant 1-3594

MODERN AIR COMPRESSORS

2419 CFM new XPV2—100 lb. pres. Ingersoll Rand steam never used.
1315 CFM new 1949, used 3000 hrs.—Worthington YC with 200 hp., 2300 v.
80% PFGE syn. motor, MG set, starter, aftercooler air receiver.

STANHOPE, 60 E. 42 St., N. Y. 17, N. Y.

IMPREGNATING TANKS

2—9'0" x 25'0" Devine .875" shell, vertical, 100 psi
2—8'7" x 37'0" Westinghouse 1.125" shell, horizontal, 150 psi

MISCELLANEOUS

3—Tube-type heat exchangers 1'8" x 18'4"
2—Quimby Hot Oil Pumps—200 gpm at 25 psi
2—25 hp. gear motor driven Gum Pumps

BRIDGE CRANE

5 ton—30'1½" wheel span

AMERICAN DEMOLITION COMPANY
627 Franklin Avenue Pittsburgh 21, Pa.
PEnhurst 1-2012

COX MACHINES
Pipe Cutting and Threading
Tube Cutoff
New Machines Only
The Cox and Sons Company
Bridgeton, N. J.
Catalogue upon Request

No. 3 Niagara Angle Bending Roll, M.D.
100 KVA Thomson Spot Welder, 24" Throat.
55H. Cochrane Bly 8" Cap. Hyd. Cold Saw.
4K Kearney & Trecker Horiz. Mill, Late Type.
No. ½, No. 1½ Buffalo Univ. Ironworkers, M.D.
600 Ton Southwark Hyd. Inclined Wheel Press
6' x ¼" Lown Initial Bending Roll, M.D.

FALK MACHINERY COMPANY
16 Ward St., Baker 5-5887, Rochester 5, N. Y.

SALE OR RENT

1—1975 CFM Worthington DYC direct connected to 350 HP Synchronous Motor—New 1953
3—25 & 45 Ton Diesel Electric Locomotives
1—30 Ton Browning Diesel Locomotive Crane

B. M. WEISS COMPANY
Girard Trust Bldg. Philadelphia 2, Pa.

PRESSES & BRAKES

Sacrifice for immediate plant clearance. Inspection in Cleveland under power. No reasonable offer refused.
14' x 525 Ton Brake or press, 20" stroke
500/300 Ton Bliss, 40x50", air cl. & cush.
900 Ton Hamilton 41x54" bed, 16" & 32" str.
1500 Ton Bliss, 53x72", 24" str., air cl.

Wender Presses, Inc., 11129 French Rd.
Detroit 34, Mich. Phone WAlnut 5-1172

OVER 1,000 NEW AND USED MACHINE TOOLS IN STOCK
WRITE FOR LATEST STOCK LIST
MILES MACHINERY COMPANY
7041 EAST GENESEE • SAGINAW, MICH. PL. 7-3104

COIL CRADLE
60"—20000 lb. Capacity
Adjustable; with 5-ROLL FLATTENER 2 Pinch Rolls; Reasonable; photos
#7 KLING VERT. PUNCH 36" Throat Late
#"O" SUTTON TUBE STRAIGHTENER 5 Roll
Seaboard Steel Co., Inc. **New Haven, Ct.**

For Sale 50% Off
HI SPEED STEEL REX AA
2" to 5" Dia. Listing supplied upon request. Contact Purchasing Dept.
Toledo Pipe Threading Machine Co.
1445 Summit St., Toledo 4, Ohio
Phone CH 1-5175

SURPLUS STEEL
NEW *WANTED* **USED**
Structurals, Plate, Pipe and Tubing
Consumers Steel & Supply Co.
P. O. Box 270, RACINE, WISCONSIN

WEISS STEEL CO. INC.
600 WEST JACKSON BLVD.
CHICAGO 6, ILLINOIS
Buyers of Surplus Steel Inventories
39 Years of Steel Service

WANTED
SURPLUS STEEL
WALLACK BROTHERS
7400 S. Damen Ave. Chicago 36, Illinois
GROVEHILL 6-7474

ELECTRIC FURNACE
BRAZING & BRIGHT ANNEALING
New, never used, Roller Hearth Type. 36" wide by 21' long with 18" clear height. 3 zone control complete. 2100°F built by Dreyer.
THE JOE MARTIN CO., INC.
19252 JOHN R. DETROIT 3, MICH.
TWinbrook 2-5500

DIESEL ELEC. LOCOMOTIVES
3 New 25 Ton, 2 GE. 1 Whitcomb
3— 23 Ton, 2-45 Ton Used Gen Elec.
1— 44 Ton, 1-80 Ton Used Gen Elec.
1—100 Ton, Alco Used New 1955
3—100 Ton Gen Motors 600 HP Used
STANHOPE, 60 E. 42nd St., N. Y. 17, N. Y.

WANTED
BRIDGE CRANES
ARNOLD HUGHES COMPANY
2765 PENOBSCOT BLDG. DETROIT, MICH.
WOodward 1-1894

Revised . . . Pocket Size
SERIAL NUMBER REFERENCE BOOK
For METAL WORKING MACHINERY
Lists age and serial numbers for over 225 Machinery Builders. **$12.50**
10-Day Return Guarantee. Send Check to:
INDUSTRIAL PUBLISHING CORP.
Dept. 2 18239 Meyers Rd., Detroit, Mich.

FOR SALE
STRAIGHTENER, BAR OR TUBE
#2BM Sutton, 5 Roll Type, Capacity ¾" to 3½" Dia. Bars or 5" Tubes
NEW 1944 **EXCELLENT CONDITION**
TIPPINS MACHINERY CO.
1001 Washington Blvd. Pittsburgh 6, Pa.
EMerson 1-3400

EQUIPMENT AND MATERIALS WANTED

WANTED TO PURCHASE
Metalworking or fabricating plant
REPLIES CONFIDENTIAL
Mr. W. B. WEISS, President
WEISS STEEL CO., INC.
600 W. Jackson Blvd., Chicago 6, Ill.

EMPLOYMENT EXCHANGE

EMPLOYMENT SERVICE

HIGH GRADE MEN—Salaries $5,000 to $25,000. Since 1915 thousands of Manufacturing Executives, Engineers, Sales Managers, Comptrollers, Accounts, and other men of equal calibre have used successfully our confidential service in presenting their qualifications to employers. We handle all negotiations. Submit record with inquiry. The National Business Bourse, 20 W. Jackson Blvd., Chicago.

HELP WANTED

Executive Sales—Aluminum or Brass & Copper experience with good eastern contacts. Volume sales of strip coil. Straight commission. High potential earnings.
BOX G-941
c/o The IRON AGE, Chestnut at 56th, Phila. 39

REPRESENTATIVES WANTED

WANTED
Manufacturer's agent in Western Pennsylvania to represent malleable foundry.
BOX G-944
c/o THE IRON AGE, Chestnut at 56th, Phila. 39

CONTRACT MANUFACTURING

METAL STAMPINGS
Send your blueprints for our prompt quotation. Latest brochure sent upon request.
CARLSTROM PRESSED METAL CO., INC.
58 Fisher Street Westboro, Mass

SPECIAL MACHINERY
DIAMITE *Abrasive Resistant* Castings
NI-RESIST *Heat & Corrosion Resistant* Casting
P M G BRONZE *High Strength Acid Resistant* Castings
Fully Equipped—Pattern Foundry & Machine Shop Facilities—Castings to 15 tons
Weatherly Foundry & Mfg. Co., Weatherly, Pa.

DROP FORGINGS
Special Forgings of Every Description. We solicit your prints or model for quotation.
Wilcox Forging Corporation
Mechanicsburg **Penna.**

DROP FORGINGS
To Your Specifications
Prompt Quotations
BALDT ANCHOR CHAIN & FORGE DIVISION
P. O. Box 350—Chester, Pennsylvania

Gray Iron and Semi Steel Castings, also alloyed with nickel, chrome, and molybdenum. Wood and Aluminum pattern work.
KING FOUNDRIES, INC.
Phone OX-9-4823 North Wales, Montg. Co., Pa.
22 Miles from Philadelphia, Pennsylvania

Special Washers
We carry in stock Silicon killed steel specially suited for case-hardening. Stock dies for producing washers from .0015 to ½" thick.
Thomas Smith Company
294 Grove St., Worcester, Mass.

This section appears in the 1st and 3rd issue each month and carries announcements of plants offering specialized experience and facilities for the production of stampings, spinnings, weldments, wire forms, springs, screw machine products, forgings, castings, gears, dies, assemblies, special machinery, and services such as machine work, heat treating, plating, galvanizing, etc.

SPECIFY MEEHANITE CASTINGS FOR MAXIMUM SERVICE
SPECIAL TYPES FOR RESISTANCE TO ABRASION • HEAT • WEAR • CORROSION
AS CAST OR MACHINED.
Weights: 1—60,000 lbs.
ROSEDALE
FOUNDRY & MACHINE CO.
1731 Preble Avenue • Pittsburgh 33, Pa.
Telephone: CEdar 1-4007

WELDED or RIVETED

STEEL PLATE FABRICATION

- Gas Seal Hoods for Blast Furnaces
- Furnace Roof Rings
- Cinder Cooling Cars
- Billet Cars
- Ingot Cars
- Ladle Cars
- Hopper Cars
- Gondola Cars
- Heavy Truck Bodies
- Boiler Casings
- Boiler Breechings
- Flues and Ducts
- Condenser Shells
- Condenser Piping
- Heavy Turbine Housings
- Hoppers and Bunkers
- Tanks and Vats
- Pressure Vessels
- Wind Tunnels
- Crane Bridge Girders
- Trolley Frames and Trucks
- Rigid Frames
- Roll-Over Fixtures
- Engine Frames and Bases
- Crawler Frames
- Press Platens and Beds
- Press Columns
- Heavy Machinery Parts and Assemblies
- Design Conversion of Castings to Weldments

MACHINING

- Complete Machining Service—Facilities for Heavy Work of Unusual Dimensions

THE R. C. MAHON COMPANY
DETROIT 34, MICHIGAN
Branch Offices in New York, Chicago, Los Angeles and San Francisco

MAHON

SINCE 1895

DROP FORGINGS

Small drop forgings up to one pound in size. Inquiries invited for very prompt action.

KEYSTONE FORGING COMPANY
Northumberland Pennsylvania GReenwood 3-3525

THE FORMULA:

Multi-operation presses
plus
Yankee skilled workmen
over
Eighty years manufacturing know-how equals
Low cost metal stampings
And precision assemblies
To meet your needs

The GREIST MANUFACTURING CO.
646 Blake St., New Haven 15, Conn.

PIT-MOLDED CASTINGS

. . . a specialty in our MEEHANITE foundry. We can handle any size casting from 5 to 26,000 pounds, rough or machined to your specifications. (MEEHANITE properties lie between cast iron and steel.)

Our shops are also equipped for:

- LARGE PATTERN MAKING
- HEAVY PLATE STEEL FABRICATION
- MACHINE SHOP FACILITIES
- PRODUCTION AND ASSEMBLY OF CUSTOM-BUILT MACHINERY

HARDINGE MANUFACTURING CO.
240 Arch Street York, Pennsylvania
Phone 33821

DROP FORGINGS

Special Forgings—High Quality, Fast Delivery. For prompt attention phone or send prints to John Bello.

CARCO INDUSTRIES, INC.
7341 Tulip Street, Phila. 35, Pa.
DEvonshire 2-1200

Nepsco

NEW ENGLAND PRESSED STEEL COMPANY

Contract Manufacturer since 1914

METAL STAMPINGS
SPECIALTIES—APPLIANCES

For Industrial and Domestic Users

P. O. BOX 29
NATICK MASSACHUSETTS

STA-FAST STEEL WEDGES

sharp edges give holding power like a screw.
Self-Aligning Steel Belt Fasteners.
Standard Steel Rivets used with Self-Aligning Fasteners.

STAMPINGS PUNCHINGS WASHERS
to your specifications
Catalog sent upon request

SALING MANUFACTURING COMPANY
Standard-Belt-Fastener Division
UNIONVILLE, CONNECTICUT

OLSON

SCREW MACHINE PRODUCTS

Made to your specifications and tolerances. From smallest up to 2⅝" diameter in steel, brass and aluminum.

OLSON MANUFACTURING CO.
101 Prescott Street Worcester, Mass.

ADVERTISERS IN THIS ISSUE

An asterisk indicates that a booklet, or other information, is offered in the advertisement.

This index is published as a convenience. No liability is assumed for errors or omissions.

A

*Abell-Howe Co. 94
Acme Chain Corp. 93
*Aldrich Pump Co. 13
Alliance Machine Co. 23
*Allied Research Products, Inc. ... 26
Aluminum Co. of America 30-31
*American Brass Co. 89
*American Chain Div., American Chain & Cable Co., Inc. 70
American Demolition Co. 128
*American Optical Co. 18
American Society for Metals 91
*American Welding & Mfg. Co.. 98
Anaconda Aluminum Co. 101

B

*Babcock & Wilcox Co., Tubular Products Div. 4
Baker, J. E., Co. 66
Baldt Anchor, Chain & Forge Div. 129
Bearings, Inc. 50
Belyea Co., Inc. 126
Bertsch & Co. 92
Bethlehem Steel Co. 1
Bullard Co. 54

C

Carco Industries, Inc. 130
Carlstrom Pressed Metal Co. 129
Cattie, Joseph P., & Bros., Inc... 92
*Cincinnati Milling Machine Co., Milling Machine Div. 58
*Cincinnati Shaper Co. 109
Cleveland Worm & Gear Co. 38
Colorado Fuel & Iron Corp. ..28-29
Consumers Steel & Supply Co. ... 129
Cox & Sons Co. 128
Crucible Steel Casting Co. 92
Crucible Steel Co. of America .. 95
Curry, Albert, & Co., Inc. 127

D

Davidson Pipe Co., Inc. 128
Demag 27
*Diamond Manufacturing Co. ... 17

E

Eastern Machinery Co. 127
Eastern Stainless Steel Corp....20-21
*Elliott Company, Crocker-Wheeler Plant 16
*Ex-Cell-O Corp. Inside Front Cover

F

Falk Machinery Co. 128
Ferry Cap & Set Screw Co. 17
Flexo Products, Inc. 124
Foster, Frank B., Inc. 128
*Foster, L. B., Co. 111

G

Gates Rubber Co. 96-97
*General Steel Castings Corp. .. 57
Goodrich, B. F., Industrial Products Co. 5
Goss & DeLeeuw Machine Co. .. 92
Greenlee Bros. & Co. 62
Greist Manufacturing Co. 130

H

Hager, C., & Sons, Hinge Manufacturing Co..... 124
Hallden Machine Co. 106
Hardinge Mfg. Co. 130
Hendrick Manufacturing Co. 22
Henry, A. T., & Co., Inc. 127
*Houghton, E. F., & Co. 60
Hughes, Arnold, Co. 127, 129
Hyman, Joseph, & Sons..... 128

I

*Industrial Metal Protectives, Inc. 71
Industrial Publishing Corp. 129
Inland Steel Co. 8
*International Nickel Co., Inc... 35
Iron & Steel Products, Inc. 127

J

Jones & Laughlin Steel Corp., Stainless & Strip Div. 52

K

Keystone Forging Co. 130
King Foundries, Inc. 129

L

Lang Machinery Co., Inc. 128
Logan Co. 103
Luria Bros., & Co., Inc. 115

M

MacCabe, T. B., Co. 128
Mahon, R. C., Co. 130
Martin, Joe, Co., Inc. 129
Miles Machinery Co. 128

N

National Business Bourse, Inc. .. 129
National Machine Products Co... 132
National Machinery Exchange .. 127
National Steel Corp. 12
New England Pressed Steel Co... 130
*Northern Engineering Works .. 49

O

Olson Manufacturing Co. 130

P

Pangborn Corp. ..Inside Back Cover
*Pennsalt Chemicals Corp., Metal Processing Dept. 32
*Poole Foundry & Machine Co. ... 92
Porter, H. K., Co., Inc. 104-105
Purdy Company 128

R

Refractories Div., H. K. Porter Co., Inc. 104
*Republic Steel Corp. 24-25
Riverside-Alloy Metal Div., H. K. Porter Co., Inc. 105
Roebling's, John A., Sons Corp. 33
Rosedale Foundry & Machine Co. 129
Ryerson, Jos. T., & Son, Inc. ... 6

S

Saling Manufacturing Co. 130
Seaboard Steel Co., Inc..... 129
*Shepard Niles Crane & Hoist Corp. 15
Smith, Thomas, Co. 129
Stanhope, R. C., Inc. 128, 129
*Starrett, L. S., Co. 19
Steel & Tube Div., Timken Roller Bearing Co. Back Cover
Swindell-Dressler Corp. 68-69

T

Timken Roller Bearing Co., Steel & Tube Div. ....Back Cover
Tinnerman Products, Inc. 10
Tippins Machinery Co. 129
Toledo Pipe Threading Machine Co. 129
Torrington Co. 65
Trent Tube Co., Subsidiary of Crucible Steel Co. of America 95

U

Udylite Corp. 14
*Union Carbide Metals Co., Div. of Union Carbide Corp. 36
U. S. Steel Wire Spring Co..... 132

W

Wallack Bros. 129
Weatherly Foundry & Mfg. Co... 129
Weirton Steel Co. 12
Weiss, B. M., Co. 128
Weiss Steel Co., Inc. 129
Wender Presses, Inc. 128
*Wheelabrator Corp. 34
*Whitehead Metals, Inc. 72
Wickwire Spencer Steel Div., Colorado Fuel & Iron Corp. 28-29
Wilcox Forging Corp. 129

CLASSIFIED SECTION

Clearing House 126, 129
Contract Manufacturing 129, 130
Employment Exchange 129
Equipment & Materials Wanted 129

The IRON AGE Chestnut & 56th Sts., Philadelphia 39, Pa.

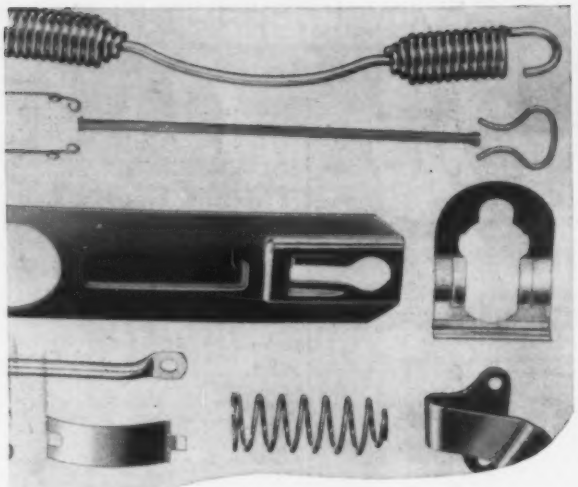
Please send me rates and general information about the Classified Section without obligation on my part.

NAME ..... TITLE .....

COMPANY .....

STREET .....

CITY ..... ZONE ..... STATE .....



COIL SPRING SAYS:

You're always ahead when you rely on U. S. Steel Wire Spring for springs and small parts. At our plant, up-to-date testing and inspection insure the quality of our springs which help you keep rejects to a minimum thus lowering your production costs. Let us quote on your spring requirements today. Remember, it pays to deal with spring specialists.

No order too large or too small!

The **U. S. STEEL WIRE SPRING** Co.

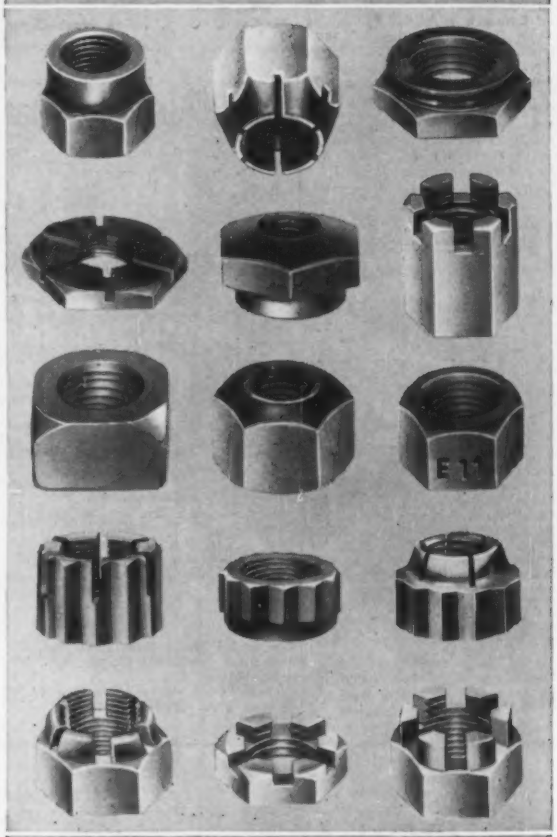
7800 FINNEY AVE. • MICHIGAN 1-6315

CLEVELAND 5, OHIO

SPECIAL NUTS

to specs. 1/16"—4 1/4" cross flats

special machines + large stock of material x years of experience = speedy deliveries high quality low prices



Here are a few samples made to customers specifications . . Our batteries of special high-speed multi-spindle, automatic machines make possible fast and accurate production of hexagon nuts of non-standard height and special shape from carbon or alloy steel, Naval bronze or other non-ferrous metals; also AN 310 through AN 335 as per latest Airforce specifications. Very often the special nut you require may be similar to one we are already making and a simple modification would result in a price advantage and quicker deliveries to you . , Send us your blueprint and particulars —let us quote on your requirements . . We also have a catalog that contains complete specifications, engineering data and prices regarding our standard nuts.

Manufacturer of Standard and Special
**12 Pointer, Square and Hexagon Nuts*
. . . "Huglock" and "Conelock" locknuts.

NATIONAL MACHINE PRODUCTS COMPANY

an sps company 44250 UTICA ROAD UTICA, MICH

ROTOBLAST CUTS CLEANING TIME 42%

Pangborn Rotoblast reduces cleaning time from 12-15 minutes per 2,000 lb. load to 7 minutes at Ingersoll-Rand

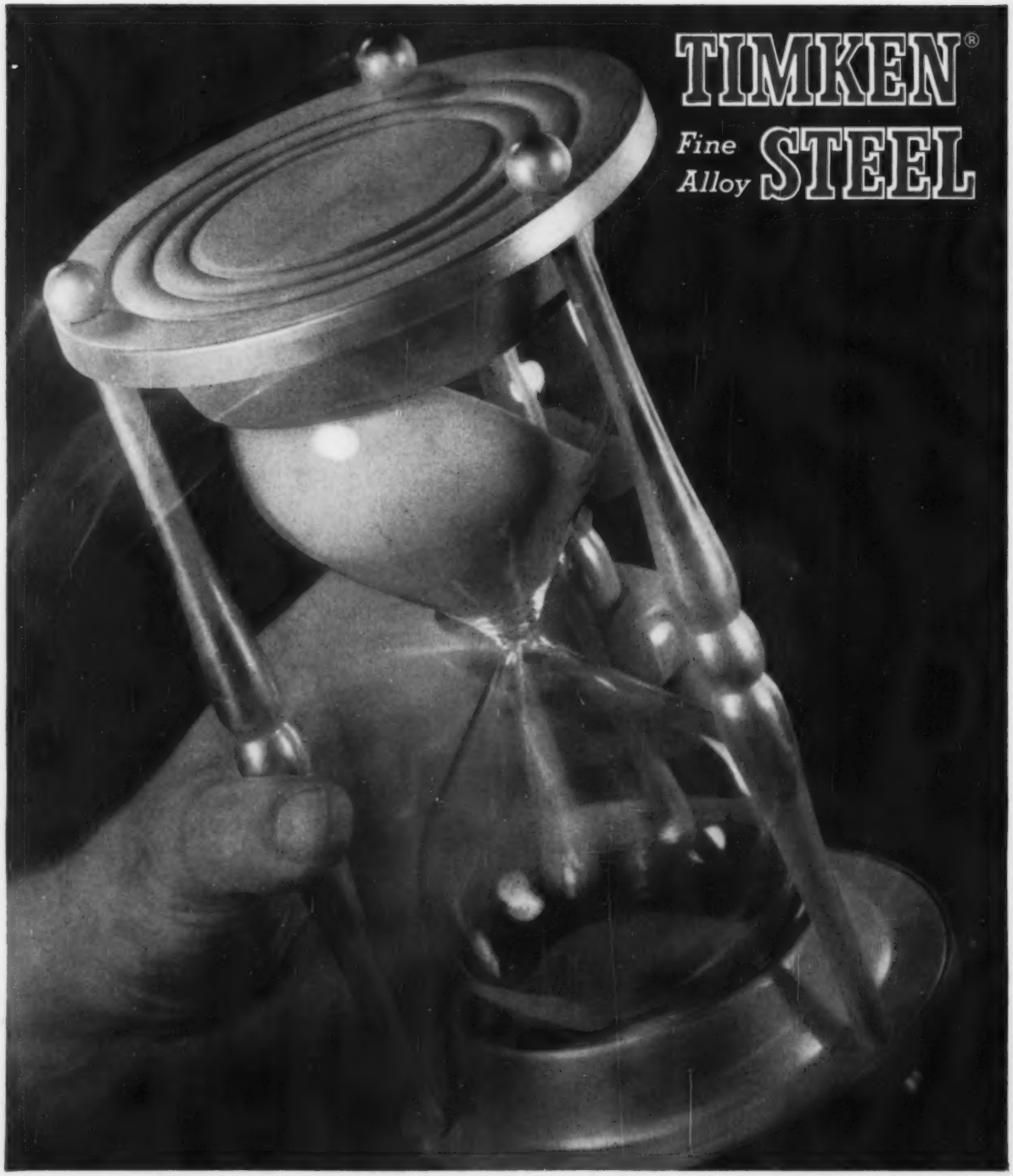
At Ingersoll-Rand Co., Painted Post, N.Y., blast cleaning loads weigh 2,000 lbs., include castings up to 300 lbs. each. To handle these loads efficiently, Ingersoll-Rand replaced its old blast cleaning barrel with a new Pangborn Rotoblast Barrel . . . and benefited *three* ways!

Cleaning quality is "incomparably better." Maintenance time and costs have been drastically cut. (For example, wheel vanes previously lasted 12 to 15 blast hours, now last 70 blast hours.) And cleaning time per load has been reduced from 12-15 minutes to only 7 minutes! Cleaning production now exceeds 10,000 lbs. per hour, cutting 7½-hour days to 3 and 4-hour days in the cleaning department.

For full details on how Pangborn Rotoblast can save you money, write: PANGBORN CORPORATION, 1500 Pangborn Blvd., Hagerstown, Md. *Manufacturers of Blast Cleaning and Dust Control Equipment —Rotoblast Steel Shot and Grit.*®

Pangborn

Cleans it fast with
ROTOBLAST®



24 HOURS from the time we receive your order for Timken® 52100 steel tubing, your shipment will be on its way from our new warehouse. 101 sizes are carried in stock, from 1″ to 10½″ O.D., over a wide range of wall thicknesses. For less-than-mill quantities, it's unbeatable service. Same prompt delivery on 4720 and 4320 tubing in your choice of 50 sizes. The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. *Makers of Tapered Roller Bearings, Fine Alloy Steels and Removable Rock Bits.*